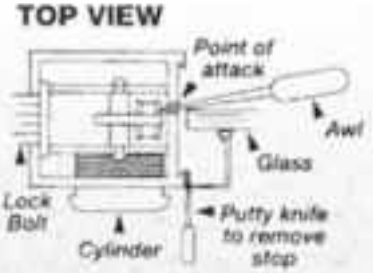
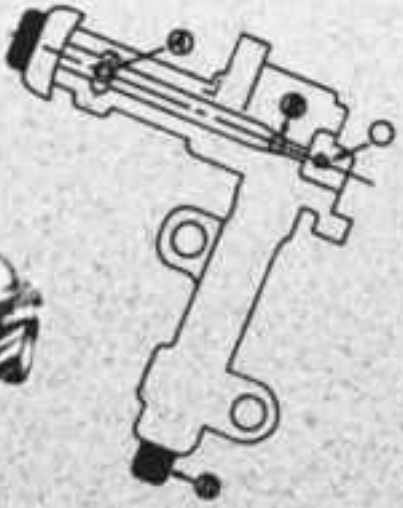
The National Locksmith's

Professional Locksmith Secrets Revealed





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Open 1995 Altima

I had a call to open a 1995 Nissan Altima. Before I left to do the job, I tried to read up on the opening in my tool opening manual. But, the manual only went to 1994. 1 figured that the procedure would probably be the same for the '95 model.

I used the recommended tool and tried to catch the bell crank below the lock - that didn't work. Neither did a "jim" type tool when I tried to pull on the vertical rod. I found out that the linkages were protected when I looked in the door with my inspection light.

At the same time I noticed that the bottom edge of the window was only about 2" below the weather strip and decided to try to use an under the window tool to open this car.

My under the window tool went right under the window and inside the car without a hitch. I manipulated the lock button and opened the door with ease.

Frank Gonzales
California

Ford Van Opening

To enter a 1994 to 1995 Ford van quickly and easily, remove the license tag light and insert a long narrow screw driver into the opening at an angle. Push the screwdriver about 10" into the door until it rests against the door lock. Then, just "nudge" the lock gently and your in.

Jerry Barnes
North Carolina

Avalon Opening

At 3:30 p.m. the manager of a gift shop on the air base near where I live called me to open a 1995 Toyota Avalon. I reluctantly agreed to take a lockout call that I felt certain I would not be able to complete.

I was told on the telephone that the lady had been locked out since 11 a.m. - that the base security police and another locksmith had repeatedly tried to open the car without success. I told the woman that I would be willing to come out and try to open her car, but that I would make no guarantees.

When I looked the car over, I thought that an under the-window tool would be the trick tool to work with. I inserted the tool, flipped the rocker button back and it sprang right back to the locked position! Then, I remembered reading about the Lexus GS300 where you had to manipulate the rocker button and pull up on the latch handle at the same time.

I tried that and the door opened very easily. Of course, after making the first attempt, the alarm was going off in my ear which was a distraction. But, the customer was happy and I was pleased with the opening and the fee I received.

Rodger Long
Illinois

Editor's Note: While I haven't tried the Avalon lock as of yet, Rodger, the system you're describing is the Smart Lock system that Lexus uses on all of its vehicles. Although not super difficult, pulling up on the handle at the correct time can sometimes be difficult. Timing is everything.

Honda Trunk Opening

A customer had locked his keys in the trunk of his 1993 Honda Accord and called me to retrieve them for him.

This vehicle has a lever for the trunk and the gas filler door besides the drivers seat but the levers were locked.

I noticed that the plastic cover that protects the lever mechanism seemed to have a center panel (about 1/4" wide and 2" long) that could be pried or lifted out after removing a single Phillips-head screw. Sure enough, when I gently probed this area with a screwdriver, the service panel popped up and exposed the cables attached to the levers.

Now, you can manipulate the lever (which is spring loaded) to open the trunk. I think this is easier then trying to pick the trunk or impression a key.

Orland Hancock
Nevada

Contour, Mystique Opening

I have read about a number of ways to open the new Ford Contour and Mercury Mystique. I think I have found the easiest way to get into these cars.

I pick the trunk lock, which is a wafer lock without a side-bar. Once the trunk is open, I find it very easy to pull the release to let down the back seat and reach through to unlock one of the doors.

Royce Evans
Ohio

Editor's Note: Royce, thanks for showing us another way to gain entry into Ford's latest models. Personally, I prefer an Under-The-Window tool. But maybe that's because I'm too big to fit in that tiny trunk.

Saturn Opening

I just opened my first Saturn.

Three separate opening books called for a horizontal opening - forward. I couldn't make it work. When I put my light in the door, I was amazed at all the junk in there.

Looking close to the latch side of the door, I saw a solenoid. Easy opening! Just pull up on it with an "L" type tool and you're in.

James Harding
Delaware

Quick Nissan Opening

I received a request to open a 1993 Nissan 240SX and when I arrived on site, I found that I did not have the tool recommended by the opening manual that I had for this car. I tried picking the lock without any lick and began looking for another way into the car.

This model had the rocker type lock buttons on the inside of the door panel and I decided to see if I could manipulate that button. I quickly discarded the Under-The-Window tools and several others as options.

Then I pulled out a piece of hobby wire, about 1/16" thick and 36" long. (You can get this at any hobby store and I find it comes in handy for all sorts of tricks and things.) I put a bend in the end of the wire about 1/2" deep and 1/2" wide *(see Illustration 1).* Then I inserted this tool, after bending a slight radius along it's length, between the window (back edge) and the door frame.

It was then a simple matter of hooking the rocker button and pulling it toward the back of the car with my improvised tool. Because the wire is almost too short to reach the button, I used a pair of Vise-Grip pliers to grip the wire tightly and allow me to control the tip of the tool.

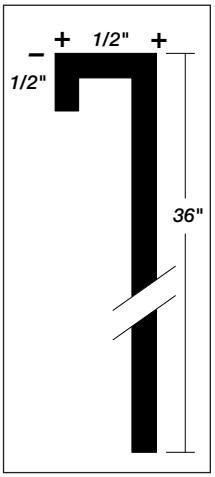

Illustration 1.

Actually, I found this

method to be faster than the recommended method in the manual I have. The only thing you have to be careful of is not to scar the paint or trim around the window and door frame. Usually, a piece of masking tape applied at the entry point of the tool will prevent accidental scaring or scratching.

Jay Christie
N. Carolina

Maxima Opening Method

All of the 1995 Maxima opening information I have read suggest using an Under-The-Window tool. This approach is fine unless the windows are heavily tinted and you can't see inside the car to guide the tool or possibly scratch the tinting.

My approach uses the rear door where the linkage is most accessible. I use Tech-Train's TT1003 tool, but a Z-tool or something similar should work very well.

Begin by inserting a wedge about 6" in front of the smaller rear glass. Insert the short end of the tool (pointing towards the front of the car). When the tool gets below the glass, turn it to the inside of the car. Continue lowering the tool until you contact the top linkage. Bind the tool against the linkage and slide it forward.

Wallace Mink
Tennessee

Honda Trunk Entry

My customer had locked the keys to his Acura in the trunk.

I immediately opened the door and tried the trunk release which did not open the trunk as I expected. The customer then told me that he had deactivated the trunk release button by turning off the switch in the glove box.

Since the glove box was also locked, I tried to pick it, but after a few minutes, it was just as locked as it was when I started. As a result, I decided to see if there might be another way into the glove box that would give me access to the switch that would arm the trunk release mechanism.

Using a small wedge, I placed it in the upper left hand corner of the glove box's door and gently pried outward until I had enough room to insert my probe light to see if I could see the switch. The rocker-type switch was straight in from where I had pried open the glove box door and was easily reachable with a hook pick.

After turning the switch to the ON position, it was a simple matter to activate the trunk release and retrieve my customers keys.

Douglass D. Dorr
Ohio

Trunk Opening On A Lexus

If you get called out to retrieve the keys locked in a trunk of a Lexus, here's a way to accomplish it without damaging anything.

First gain access to the inside of the car. Check to see if the trunk release button will unlock the trunk. If the button is pushed in to the locked position, you will need to unlock the key kill switch. To do this, remove the lower dash screws and pull out the dash board next to the trunk lock release. Once you have gained access to the back of the lock, you will see a spring loaded clip around the rear of the lock. Remove this clip and you will see the small spring loaded locking tab.

Push this tab in and the key switch will pop out. Try the trunk release again. If it opens you're in good shape. Put everything back together and you're done. If it doesn't open, it's because the alarm is armed and needs to be turned off.

To turn the alarm off, take off the drivers door panel to access the rear of the key lock on the door. Gently remove the key lock, being careful of the wires that are

attached to the lock. On the back of the lock, you will notice a white plastic piece. Very gently remove this from the rear of the cylinder and gently turn the disk inside with a small screwdriver. Turn one way and the alarm will arm. Turn the other and the alarm will disarm.

Once you have the alarm off, you can depress the trunk release button and the trunk will open. Now, you can put everything back together, collect your coin and go home.

Charlie Dill,
New York

Lexus Trunk Popping

A customer had locked her keys in the trunk of her Lexus SC400. I asked her if the car had an inside trunk release and she said that it did. As I headed out to the job, I didn't think that it would be much of a problem to retrieve the keys and get the customer on her way.

I opened the door fairly easily and pulled the trunk release lever. Nothing happened. Apparently the Lexus alarm system disables the trunk release until the alarm is disarmed with the key.

With her spare key three hours away and the dealer promising a key within three days, the customer was desperate, so I decided to remove the rear seat to see if I could access the trunk that way. Not finding any holes I told her I thought the only way would be to drill the lock. She agreed. But when I saw the location of the cylinder in the tail light housing, I opted not to drill the lock.

I realized that what I had to do was fool the alarm into thinking the key was turned in the lock. Here's how I did it.

I removed the door panel. This is easy since there are only a few screws holding it on. After peeling away the water shield, I located the back of the lock cylinder and followed the harness coming off of it to the connection closest to the bottom of the door *(see Illustration 2)*. Then, I disconnected the connector.

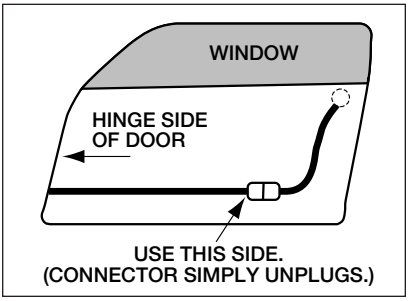

Illustration 2.

Using the connector piece closest to the hinge side of the door, I jumped the connector and "unlocked" the door locks. Once the doors were unlocked, the alarm was shut down and the trunk release lever could be pulled to open the trunk.

If the trunk release lever is manually locked you can use the same "jump" method on the back of the trunk release lock. Just remove the connector from the back of the lock, jump between the proper contacts and the trunk will pop open.

This is a lot faster and easier then it may seem and it sure beats drilling. I have not tried this method yet on other Lexus models but feel it should work just as well.

Scott Aronson, Jr.
New Jersey

Astro Opening

I do a lot of vehicle lockout calls in my area and the one vehicle I often have trouble with is the 1989 Astro Van. Even though I have an Astro tool, I find it is easier to wedge the window on the sliding door and reach in with a Slim Jim and pop up the window lock clamp in the front and then in the back of the window.

The window will open about four inches and then I reach in through the window and unlock the door. Quick and easy, don't you think?

James W. Mortimer
Iowa

Taurus Back Seat Access

I had a customer that locked her keys in the trunk of her 1996 Ford Taurus. This vehicle has the new wider keyway, and when I tried to pick it, I found that I did not have a tension wrench wide enough to apply tension on the keyway.

Looking for another way to retrieve the customer's keys, I unlocked the driver's side door hoping to find a trunk release button by the driver's seat or in the glove compartment. No such luck.

However, what I did find was a seat release on top of the back seat. I activated the release, popped the seat and pulled out my customer's keys.

Randy Gregory,
Oklahoma

[Editor's Note: The keyway that Randy mentions is much wider then previous Ford keyways and the first one that I encountered threw me a curve for a second. However, I just happened to have an A-1 No. 24 Adjustable Tension Wrench in my pick case which solved the problem very nicely. You can obtain your very own A-1 No. 24 Adjustable Tension Wrench from you favorite supplier for about $15 to $18.)

Infinity Q45 Trunk Popping

If a customer has locked their keys in the trunk of their Infinity Q45, open the locked door and push the trunk release button in the glove compartment. The car does not have to be running or the key turned on to activate this lock. Just push the release button in.

If the glove compartment is locked, just pick it open. It turns to the left. Even though the key for the glove compartment is "High Security" you can pick the glove box with very little effort.

Louis Kambeitz
California

Welding Rod Opening Tool

I used a piece of .170" X 48" welding rod to make an opening tool for use on vehicles that have hidden or difficult to reach linkages and bell cranks inside their doors.

I bent one end 90 degrees one inch from the end and bent the other end 90 degrees two inches from the end. Then, I smoothed the ends so they wouldn't catch on any fabric or trim inside the car.

I can insert the tool into the car from the upper rear corner of either door (using a little lubricant on the tool helps it slide through the weather-stripping). The length of the tool helps it reach the slide button, lock button and even the door handle on vehicles that will unlock by pulling the door handle.

I have used it on many '96 GM's and later model Nissans and Toyotas. I am sure the tool will work on other models as well. It's cheap too!

Don Dodson,
North Carolina

GM Pick Vibrator

I use a pick gun with an offset needle as a vibrator when using my R&D GM lock pick set. It works especially well on the GM trunk locks with decorative trim.

Dominick Atansio
E-Mail

Slim Jim Modification

Here's an easy way to modify a Slim Jim to grab those rods that require a large bow in the "Jim". Drill several 1/8" holes close to the tip of the "Jim" as shown in *Illustration 83*. Put a string or piece

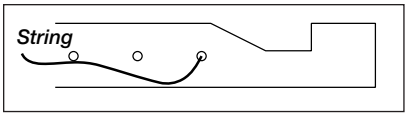

Illustration 83.

of nylon line through one of the holes.

Now when you come upon a linkage that requires a bend in the Slim Jim, just pull on the string until the "Jim" conforms to the radius that you need.

It is also easier to insert the straight Slim Jim into the door then trying to get a curved "Jim" between the weather stripping and the glass.

Werner Schulz
Germany

Removing Those Pesky Under The Window Tools

I have had some difficulty removing under the window tools from some of the vehicles I open. I came up with this simple little trick to make the tool removal easier.

Tie a piece of string (Dental String works great) to the tip of the tool before inserting it into the vehicle. Make the string long enough so that when you insert the tool the opposite end of the string remains outside the door panel.

Now when you go to remove the tool from the car, you can use the string to help align the tool for removal.

Raymond Reding,
California

NOTES

GM Lock Retainer

Working with a lot of GM door locks, I have found loose, broken or distorted wafer/spring retainer. I have also had to do a call back or two on cylinders that I had serviced where the retainer dislodged from the plug even after staking.

I found a solution to the problem that has eliminated those call backs.

I use a second retainer leg, that I modified and installed alongside of the loose end of the first retainer. To make this second retainer leg work, grind the leg of the retainer to a knife edge as shown in *Illustration 3*. Next insert this modified retainer leg alongside the loose retainer and carefully tap it down as far as it will go. That very effectively wedges the loose retainer in place.

If necessary, I use one of my modified retainer legs on both ends of the first wafer retainer.

Then break off the rest of the retainer flush with the plug. You may have to file or grind the leg down in order to get it even with the top of the plug.

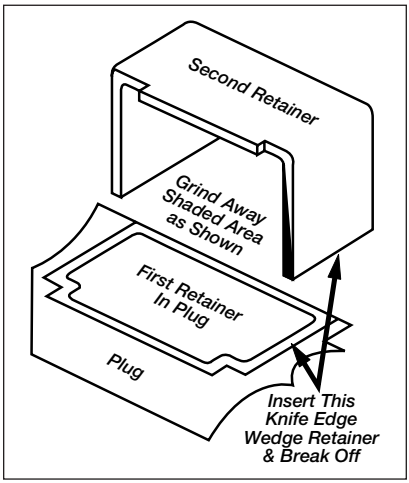
Second Retainer
Grind Away Shaded Area as Shown
First Retainer In Plug
Plug
Insert This Knife Edge Wedge Retainer & Break Off

Illustration 3.

Once you have smoothed the broken edges of the retainer and made sure that they are even with the edge of the plug, insert the key and insert the plug into the cylinder and make sure the plug rotates without binding, or hanging up.

If it does, reassemble the lock and re-install it in the vehicle.

Tommy Small
Idaho

GM Pick Up Door Lock Removal

I've been reading Technitips for some time now and I have read several tips on the removal of the late model GMC, full-sized pick-up truck door locks for the purpose of rekeying or producing a lost key. I have tried all methods successfully, but all were time consuming and extremely difficult. I have recently discovered a method that is so simple and fast, it's almost ridiculous.

First remove the inside door panel, (not the second inside metal door panel). Next use a 10mm socket and remove the two screws that secure the handle in place. As you know, removing the handle now is difficult because of the position of the linkage connected to the door handle.

Here's the trick. remove the three Torx head screws from the latch in the side of the door and this will relieve the pressure of the linkage on the door handle, and allow ample room to work. Now the handle can be easily pulled from the door to allow access to the cylinder. Do not remove any linkage, just allow the handle to hang outside of the door.

Next, remove the clip from the tailpiece. Be careful not to drop it, as retrieving it will not be fun. Let the tailpiece just hang on the linkage. Depress the retainer under the cylinder and push the plug out of the back of the handle.

To re-install the lock, first connect the cylinder to the tailpiece that's on the linkage. Then, push the cylinder through the back of the handle until the retainer is engaged securely. Put the handle back in position and replace the three Torx head screws in the latch assembly Replace the two 10mm screws that hold the handle in place, replace the door panel, and you're done!

Brian Goodson,
Texas

Editor's Note: Brian's tip was the first of three that I received regarding these GMC locks. So, his got printed. However, I want to thank Dean Huff in Lake Wales, FL. and Ross Henderson from South Carolina for sending in theirs.

Recently I was in a hardware store and on the counter there was a display of a new type of battery operated scissors. They were very small and used two AA batteries to make them works.

Horn Tower Repair

While recently disassembling a G.M. steering column, I noticed that the plastic tower on the horn ring had been broken and the spring loaded connector would not stay in place.

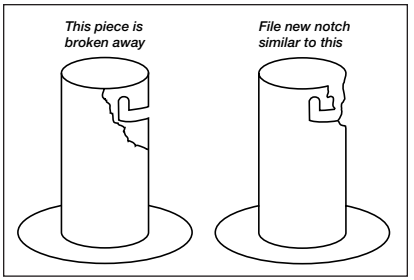

Illustration 4.

Not having a replacement ring, I used a warding file to carefully notch the tower as shown in *Illustration 4* to accept the spring loaded plastic connector. I just had to be careful to file the new notch at the same level as the original notch.

I reassembled the column, and everything - the horn included worked!

J. W. Stokes,
California

Code Reading Made Easy

If you need to originate a key for a Ford Probe, roll the passenger window down all the way. Now, using a straight tool with a small piece of rag tied around it, clean the top of the door lock.

Now, you should be able to read the key code which is on top of the lock cylinder.

Wesley E. Sherrod
Oklahoma

GM 10-Cut Progression Chart

Here's a progression chart that will allow you to generate an operating ignition key for the new Chevrolet S-10 pickup truck once you have determined the cuts needed to operate the door lock.

The first thing that you need to do is remove the door lock and decode the cuts for that lock. This lock removes in a similar manner to all newer GM trucks with the door lock cylinder in the door handle, but is easier to remove and re-install as there is no inner steel panel to contend with.

The same key operates both the door and the ignition on these vehicles with cuts 6, 7, 8, and 9 being common to both locks. Cut 10 is used only in the door cylinder as can be seen in table one.

Cut 1 does not, according to the codes that I have seen, utilize a 4 depth. Cuts 2 and 3 are not used. Consequently, that leaves cuts 4 and 5, two of the unknown cuts to

***Table 1**

Spaces:	1	2	3	4	5	6	7	8	9	10
Ignition:	I	-	-	I	I	I	I	I	I	
Doors:						D	D	D	D	D

***Table 2**
Progression Chart

Key#1 – Side A

Space	1	2	3	4	5
1	-	-	1	1	
1	-	-	1	2	
1	-	-	1	3	
1	-	-	2	3	
1	-	-	3	3	
1	-	-	4	3	
1	-	-	4	4	
2	-	-	4	4	

Key #1 – Side B

Space	1	2	3	4	5
1	-	-	2	1	
1	-	-	2	2	
1	-	-	2	4	
1	-	-	3	4	
2	-	-	3	4	
3	-	-	3	4	

Key#2 – Side A

Space	1	2	3	4	5
1	-	-	3	2	
1	-	-	4	2	
2	-	-	4	2	
3	-	-	4	2	
3	-	-	4	3	

Key #2 – Side B

Space	1	2	3	4	5
1	-	-	3	1	
2	-	-	3	1	
2	-	-	3	2	
3	-	-	3	2	

Key #3 – Side A

Space	1	2	3	4	5
2	-	-	1	1	
2	-	-	1	2	
2	-	-	1	3	
2	-	-	2	3	
2	-	-	2	4	

Key #3 – Side B

Space	1	2	3	4	5
2	-	-	2	1	
2	-	-	2	2	
3	-	-	2	2	
3	-	-	2	3	
3	-	-	2	4	

Key #4 – Side A

Space	1	2	3	4	5
3	-	-	1	1	
3	-	-	2	1	
3	-	-	3	1	

Key #4 – Side B

Space	1	2	3	4	5
3	-	-	1	2	
3	-	-	1	3	
3	-	-	3	3	

be progressioned to obtain a working key for this vehicle.

To make a working key for this vehicle do the following:

First, decode the door lock which will give you the depths for spaces 6, 7, 8, 9, and 10.

Next, cut the decoded depths only on one side of the key.

Now, use the chart shown in table two to generate a working key for the ignition using the following rules:

If the known depth in the sixth space is a 1, eliminate all combinations where the fifth cut is a four depth (a one and a four depth never appear side by side). Like all GM locks, these locks have a MACS of two. Unlike standard GM locks, the total sum of the depths can add either even or odd on these 10-cuts.

If the sixth depth is a 4, then eliminate all the combinations in the chart where the fifth cut is a 1. This will save you some time in your progressioning sequence by eliminating about 18 possible combinations.

Brad Mackenziet
Ohio

ED. NOTE: The lock that Brad is addressing is GM's new 1995 GM 10-cut ignition used on the Blazer, Suburban and small pickups using locks that are manufactured from July 1994 through September 1994.

The original version of this lock employed tumblers in positions 1 through 9. Design enhancements during the July 1994 through September 1994 period, however, eliminated positions 2 and 3. All nine positions were included in the locks both before and after this time.

Brad's tip and progression chart are not applicable to those locks manufactured outside of this time frame.

GM Steering Shaft Nut Snap Ring Remover

The GM retaining clip that

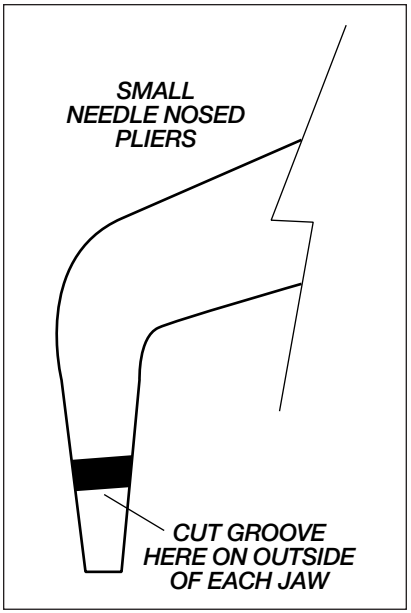

Illustration 5.

prevents the bolt holding the steering wheel on from coming off can sometimes be difficult to remove. And, if you're not careful, can easily go flying and be lost if it should suddenly "pop" of the shaft.

To make this clip easier to remove and less likely to get lost, I use a small pair of bent, needle nose pliers that I modified as shown in *Illustration 5*.

By cutting a groove in the outside of the jaws of these pliers I can insert the jaws into the clip, spread the jaws so the clip is trapped in the groove, continue to spread the jaws and the clip is off the shaft. This tool also aids in replacing this clip.

Jay Chrisite
N. Carolina

GM Mini Van Entry

A problem that I have encountered on GM mini vans concerns the cam on the latch handle of the rear door. The cam is spot welded to a post. The weld can break and leaves the cam hanging in the door - connected to the linkage - but will not allow the door to be opened.

You can determine this is the problem by pulling on the outside handle. When you do, the handle does not offer any resistance and does not spring back into place.

You can access this linkage and open the rear door by the following method:

First prepare a 1/2" Slim Jim by bending about 3/4" of the tip toward you about 30°. Then, about 8" from the tip, bend the Slim Jim 30° away from you. Place an arching bend in the Slim Jim about 4" from the tip so the Jim looks similar to the one in *Illustration 6*.

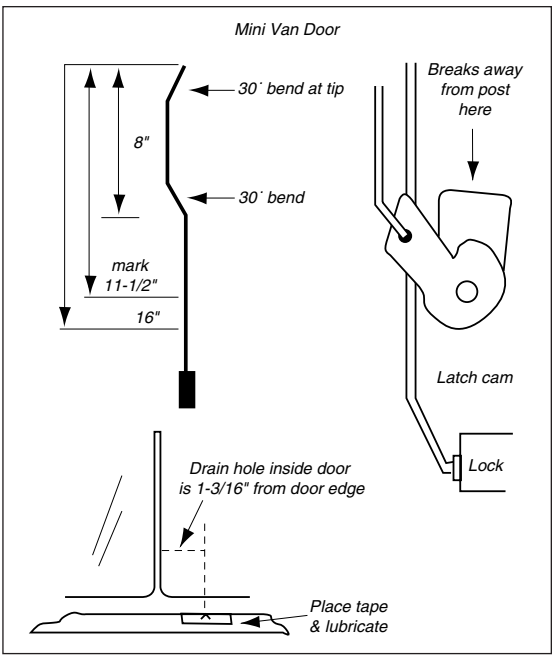

Illustration 6.

Now, mark the Slim Jim 11-1/2" from the tip. That mark gives you the location of the lock paw. Then, make another mark 16" from the tip. This mark will tell you when you are in the right area to hook the dangling cam and linkage.

You're now ready to open the door by inserting the Slim Jim into the door through the drain hole in the bottom of the door which is located 1-13/16" from the inner edge of the door. Insert the Slim Jim grab the linkage and pull down and open the door. Again, see *Illustration 6*. Once the door is open, the latch and cam can be serviced through an access panel on the edge of the door.

To keep from rubbing the paint off the body of the mini van, I place tape below the door and lubricate both the tape and the Slim Jim. I also mark the tape at the center of the drain hole.

I repaired the latch on my van by drilling and tapping for a 4-40 screw in the post to hold the cam in place. A new latch cam from the dealer is about $35. I recommend preparing a Slim Jim on an exposed door of a mini van. Salvage yards are great places to learn.

Leo Koulogianes,
Tennessee

Ford Lock Reading

To expedite reading the wafers in 1984-1/2 and up Ford door locks, I use a lock pick down through the wafer channel (from the back of the lock), with an uncut blank in the keyway. If the pick stops on the first position, I know the wafer is above the shearline and I cut that position one depth on my clipper. I repeat the process, one depth at a time until the pick will not catch the wafer. Then, I move on to the next position.

I find this technique works well for me and is quicker then trying to sight read the wafers. Especially at night.

Dominick Atanasio,
E-Mail

Editor's Note: Dom's tip is a good one for those who have trouble sight reading one of these locks. However, on some Ford products, like the Lincoln Town Car, trying to remove the lock to read it from the rear, in any manner, is too time consuming and difficult. Such situations are ready made for tryout keys, or a wafer reading tool.

Aspire Progression Chart

As many locksmiths may have already found out, the Ford Aspire is a different animal. The key blank for this car is the H70 (ILCO) or Silca's FO34. The code is not stamped on any of the locks and can only be found on a small metal tag that is attached to the original keys at the time of sale.

The ignition uses spaces one through eight and the door uses spaces three through ten. That means if you are trying to generate an operating key by removing the door lock, you are left with spaces one and two to progress before you can obtain a working key for the ignition.

I have found that the easiest, at least for me, method of generating a first key for this vehicle is to remove the door or trunk lock, sight read the wafers through the drain hole and progression cuts one and two to obtain a master key for this car.

Since, like the older GM and Ford 10-cut locks, the Aspire has a MACS of only two, it is fairly easy to progression the ignition key once you have an operating door or trunk key. To further simplify the progressioning, I have developed the following Ford Aspire progression chart.

If your third cut is a #1, progression your key as follows:

First Key

1-1, 2-1, 3-1, 4-2

Second Key

1-2, 2-2, 3-2, 4-3

Third Key

1-3, 2-3, 3-3

If your third cut is a #2 progression your key as follows:

First Key

1 1, 2-1, 3-1, 3-3, 4-3

Second Key

1-2, 2-2, 3-2, 4-2

Third Key

1-3, 2-3, 2-4, 3-4, 4-4

If your third cut is a #3, progression your key as follows:

First Key

1-1, 2-1, 3-1, 3-2, 3-3, 3-4

Second Key

1-2, 1-3, 2-3, 2-4

Third Key

4-2, 4-3, 4-4

If your third cut is a #4, progression your key as follows:

First Key

1-2, 2-2, 3-2, 4-2, 4-3, 4-4

Second Key

1-3, 2-3, 2-4, 3-4

Third Key

3-3

Hope you find this chart as useful as I have.

Jay Christie
E-Mail

Editor's Note: For more information on servicing the Ford Aspire, refer to Michael Hyde's column in the September 1994 The National Locksmith, page 21. In that article, Michael covers opening the car and generating keys for it. Although he did not include a chart like the one above for progressioning the master key for this vehicle.

GM 6-Cut Ignition Keys

Here's a tip that my fellow locksmiths might find helpful for generating an ignition key for '95 model GM cars that still use the 6-Cut wafer system. I have used it with good success.

Use a good otoscope to look down the keyway. You will find the depths of the wafers are stamped on the face of each wafer facing the viewer! Simply read the number and cut a key accordingly.

Not every GM vehicle you come across will have this feature. But, on those that do, you no longer have to tear down the steering column to generate the key. I have also found this helpful numbering system on some 1994 models.

All it takes to find out is a peek down the keyway. Just one look and you could save yourself a lot of time and aggravation.

Tim Cobb
E-Mail

1941 Ford Lock Repair

A customer brought me a pair of new door locks for a 1941 Ford which he is restoring. The locks had original Briggs & Stratton keys and looked similar to the older AMC door locks, except they did not have the exposed plug release. Upon contacting Briggs & Stratton (now STRATTEC), I discovered that these locks are from a limited production run and are not listed in any of Strattec's catalogs.

At any rate, to remove the plug of these locks for rekeying, I used the key (or a pick if you don't have the key) to turn the plug left to the stop position Then, I inserted a curved shim between the plug and the cylinder at a point indicated by a dimple on the edge of the plug. I could then feel the spring-loaded retaining pin.

I pushed in on this pin which allowed the plug to rotate past the stop, to a removal position. Then, I just pulled the plug out of the cylinder and rekeyed it just like any other wafer lock.

James Troeller

California

Ford Facecap Fix

I'm certain that anyone who does automotive work has come across a Ford 10-Cut ignition lock with a loose facecap. Here's a quick, economical way to solve this problem for your customer that I have been using ever since this ignition made it's debut in the market-place.

First, straighten the cap and use the customers key to turn the ignition to it's removal position and remove the ignition cylinder from the housing. Next, insert an uncut blank into the cylinder and place the key and cylinder upside down (use Vise-Grip pliers or a vise to hold the cylinder steady).

Now use Super Glue around the back edge of the face cap to spot weld the facecap to the cylinder. Of course, you have to be careful that you do not get glue anywhere but on the back edge of the facecap and the edge of the cylinder that the face cap is swaged to.

Avon Aiken
Florida

Chrylser Lock Diagnostics

A customer called complaining that he could not get his ignition key to enter the keyway of his 1989 Dodge Caravan without difficulty. He said he had used graphite in the keyway and then tried WD-40 with little luck. He wanted to know how much I would charge to install a new ignition.

Before quoting a price, I asked him about the "history" of the switch and if he had any keys that seemed to work better then the one he was having trouble with. He told me that the problem had been progressive and the key he had been given when he bought the van seemed to work best.

When he got to my shop, I tried the keys he brought with him and found it was very difficult to get any of the keys in or out of the ignition switch easily. Thinking that there might be something wrong with the "duplicates" (none were original keys), I checked the keys, paying particular attention to the "ramps" at the tip. There did not seem to be any problems with them.

Next, I code cut a key on my 1200. Same problem. I even tried filing the tip of the key to a shallower angle. That didn't help either. I felt, then, that there was nothing to do but replace the switch.

After tearing down the column and removing the switch (You're right, Jake! Murphy and Mother Nature are out to get us.) I found I did not have the proper replacement switch! I had the older All-Lock #1444 (which I had somehow placed in the wrong box) and needed an All-Lock #1449 - which I didn't have.

Just about the time I was ready to hit the panic button, I remembered some-thing I had read several years ago about unusual pin wear in Chrysler product ignitions that would prevent the key from entering the ignition or render the key useless. Since I already had the ignition out of the column, I decided to remove the retainer and check for pin wear.

I dumped the first chamber (the number one pin) and held the rest of the springs down with my finger and inserted the key. It went in as slick as a whistle! I repinned the first chamber with the appropriate pin, driver and spring and tried the key again. No problem! Replacing the first pin allowed the key to work smoothly.

Illustration 7 shows how the pin had worn. Notice that the chamfered area of the pin had become almost squared. Each time the key "hit" this obstacle, it distorted the pin just a little more until it would no longer work

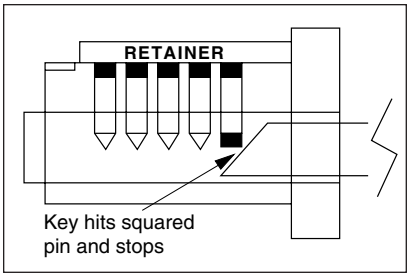

Illustration 7.

properly.

Apparently, the amount of "play" in these ignitions is the root cause of this problem. If you hold one of the older, single-sided ignitions in you hand and try to insert the key too high or too low, you can feel it "bottom out" against the first pin. I believe that's what causes the wear on this switch.

Sharon Shackleford,
E-Mail

Editor's Note: The problem described by Sharon is a commonly found problem in Chrysler ignitions. From my own experience, and from talking with others, the unusual wear that Sharon found is most common when the first chamber contains either a number one, two or three pin. The diameter of the chamber is such that it will

allow these shorter pins to "slip" or "cock" to the side and bind. When this occurs repeatedly, the pin will wear as seen in Sharon's illustration. Once that process begins, chronic binding or an inability to insert the key will occur. I believe the best solution is to install a new ignition and code it to the customers existing key. Of course, when you experience a "Murphy" kind of day like Sharon did, you work with "what ya' got". Although this info may be "old hat" to a lot of locksmiths, there are a lot of new folks out there that have not encountered this problem yet.

Impression GM Glove Box

Removing the plug from the paddle handle style glove box on GM cars such as the Olds Cutlass, Ciera, Achieva and Cadillac Deville, etc., to get the last four cuts can be a real challenge if you don't have three hands. These locks can be impressioned and since there is enough "slop" in the lock, your key does not have to be 100 percent accurate.

Once you have a key that will turn the plug (even if it's tight), remove it, turn it over and file a notch on the bottom of the blade in line with the position of the number one wafer *(see Illustration 8).* Don't file any deeper than the top of the groove. It isn't necessary and the

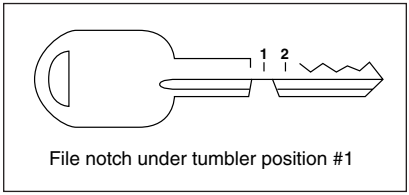

Illustration 8.

key could break if the plug turns "rough."

Next, reinsert the key in the lock, turn the plug to the "stop," depress the retainer through the hole and turn the plug to the removal position. Now you can insert another blank, determine your depths and accurately cut a working key to continue progressioning the key.

Barry Christy
Pennsylvania

Ford Ignition Switch Repair

I have had numerous service calls for Ford automobiles (Mostly, 1990 to 1993 T-Birds, Lincolns and Ford Escorts with the 10-Cut ignitions) where the customer complains that the key "flip-flops" in the ignition, but the car will not start.

What causes the problem is not

found in the ignition cylinder but in the ignition case housing which is at the end of the actuator rod in the steering *(see Illustration 9)*. The upper part of the case, or housing, is made of pot metal and the lower part - the electrical contact housing - is made from a plastic material. These two components are held together by crimping four tabs on the upper housing over the four corners on the plastic portion of the

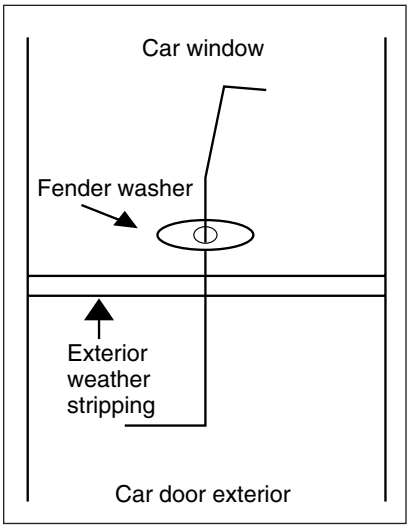

Illustration 9.

switch to which the wiring harness is connected.

On most of these units that I have serviced, the tabs on the upper housing that are closest to the steering wheel have come loose and allow the two parts to separate, thus preventing the car from starting. And, since the actuator rod is not engaging with the switch, the key does nothing but flip-flop. The fix is generally fast and easy. Here's how I do it:

First disconnect the battery. If you don't you could blow the main 80 amp fuse. On Ford Escorts and most other smaller Fords, drop the plastic steering column shroud - the switch is located higher up on the column than it is on most T-Birds, Lincolns, etc. where the switch is usually located closer to the floor on the column.

Make sure the switch is in the OFF position.

Align the plastic switch housing with the upper pot metal housing and secure the two parts with electrical cable ties (The locking type).

Make certain that the components are in proper alignment and use a small jeweler's type hammer and small punch to gently tap the tabs back into place. If possible leave the cable tie in place for extra holding power.

After making the repair, try the key for smooth operation before reconnecting the battery. Then try the key again to make sure everything works as it's supposed to.

Re-install the shrouds and you're done. The repair usually takes me about 20 minutes to effect.

Michael E. Shearer, CRL
Illinois

Quick 10-Cut Fix

When I arrived to open a 1992 Mercury Topaz, the owner told me that the key would turn, but the door would not unlock. I wedged the window and could see that the linkage had been knocked loose from the plastic pawl on the back of the lock. The pawl itself was laying in the bottom of the door cavity.

Unlocking the door did not present a great problem since I simply caught the linkage rod in the cut-out of my Slim-Jim, twisted the "Jim" to bind the linkage and lifted up on the rod to unlock the door.

Next I had to remove the door panel to retrieve the pawl, and found it was broken. Because I did not have a replacement available, I put a drop of Krazy glue on the pawl, pushed the pawl down on the

plug and held it for a minute until the glue set.

Knowing that this wouldn't hold long, I drilled a 1/16" hole through the pawl and into the tailpiece of the plug (about 1/4" deep all together). Then I drove a 1/16" X 1/4" roll pin through the pawl and

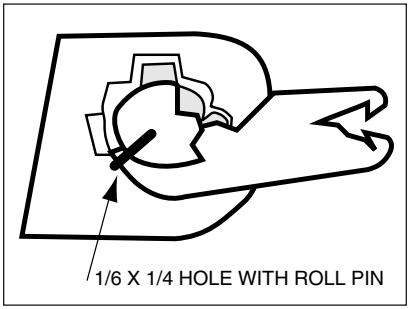

Illustration 10.

into the plug as shown in *Illustration 10.*

Apparently the customer has had no further problems with the lock as I have seen her several times since then and she has never indicated that she has had any trouble with the lock.

Mark Caudill
Texas

Editor's Note: Both All-Lock and Auto-Security Products carry a vast array of the Ford locks, facecaps and pawls. While Mark's tip is great in a pinch, consider purchasing assortment service kit from either manufacturer and be ready at all times.

A LaSabre Surprise

A customer called and asked me to make a trunk key for their 1988 Buick LaSabre. Neither the dealer or Buck Roadside, was able to furnish any codes prior to 1990, so I began to remove the glove-box lock so I could obtain four of my six cuts and progress the remaining two.

Imagine my surprise when I found that the glove box lock on this vehicle has all six wafers and a side-bar. You can recognize this side bar glove box lock immediately, because it does not turn with the key but slides to the left to lock and the right to unlock. Since I was lucky enough to find the glove box unlocked, here's how I obtained my key.

Remove the two screws that hold the entire lock mechanism in the glove box door. The front of the lock is held onto the back of the case by two pressed through, plastic clips which open in four directions. If you try to close the clip with needle-nose pliers, you can break the tip and you're only closing two of the four "legs".

Find a keyblank (a B-10 for instance) that has a small hole in the head that will not quite fit down over the end of the retainer. Slide the hole of the key over the four-pronged clip and as the legs come together, continue pushing downward until the retainer enters the back of the lock case. Repeat with the other three retainers.

Now remove the cylinder. Rake the wafers while de-pressing the slide bar, decode the cylinder and cut a new key. As you reassemble the lock, remember to pull down on the latch so you can insert the cylinder. As the lock slides back into the lock, the undamaged clips will snap back into place retaining the lock as they were intended to.

William T. Allgood
South Carolina

[Editor's Note: William's "discovery" may seem like "old-hat" to a lot of locksmiths that read this tip and think to themselves: "Shoot, everybody knows that!". What many of us tend to lose sight of is, there are new locksmiths coming into the trade everyday that are still trying to get "familiar" with the old tricks that have become second nature to many of us. So, on behalf of the "new" 'smiths that haven't heard about it, and some of the older 'smiths that might have

forgotten, I want to thank William for sharing' his discovery with us.]

Rapid Ford 8-cut Key Generation Procedure

Here's a tip for generating keys for the new Ford 8-cut that has helped me to quickly and easily produce a working key for these cars with little aggravation or strain.

When making a key for these vehicles, before I do anything else, I look into the ignition lock with a scope. Starting in the front, I observe the bottom side wafers. I have found that the depths are stamped on the wafers and that a spiral key extractor works very well in pushing the wafers down one by one to allow viewing the depths without obstructing the view.

This will give me the 2nd, 4th, 6th and 8th cuts. Having these depths right off the bat makes getting a completed key easier. Using these cuts, I only have to impression cuts 1, 3 and 5 to have a key that will work the doors and trunk. Then, I simply progress the seventh cut to generate a key that will work the ignition.

To make things even easier, I know that these locks have a MACS of two. That means, if my sixth cut is a four and my eighth cut is a one, my seventh cut can only be a two or a three. I'm sure someone can figure out a progression chart for these locks based on the known cuts of the ignition.

If you try this and the numbers on the bottom wafers are covered with grease, just use a little spray lubricant like WD-40 to wash the grease off the wafers and clear up the numbers.

Joel T. Fitchner
Alabama

GM Ignition Removal

With a little patience and practice, you can remove the new GM ignition cylinders without investing in some of the drill rigs or pick sets that are offered by many suppliers. To do so, follow these easy steps to a new key.

Remove the trim ring or bezel from around the ignition cylinder. This ring comes off very easily with just a little gentle prying. Remove the Torx screws that hold the bottom of the shroud on and then swing the shroud off of the rear clips. At the 9 O'clock position - when looking at the keyway - you will see a small gap. Using an old pick or piece of spring steel, slide it into the gap. This becomes your tension tool to put pressure of the lock's sidebar.

Now rake the wafers with a pick while putting tension on the sidebar. You can feel it when the sidebar depresses all the way. Now use a small screw driver in the keyway to begin turning the switch to the "On" position. You have to remove the "tension" tool as you turn the switch to the on position.

Now you can either remove the upper shroud to depress the retainer and remove the lock for making a key, or you can purchase a tool like Tech Train's cylinder retainer depressing tool. The code is stamped on the lock cylinder.

Once you have made the first key, replace everything and snap the trim ring back over the face of the ignition. With a little practice, you can do this job in fifteen minutes or so.

Robert Gardner,
E-Mail

Capri Key Blank Modification

Cutting a key by code for an automobile usually saves the locksmith time and headaches over impressioning, progressioning, etc. However, cutting a key by code for Mercury Capri (1991-1994, Code Series 6500—7733) can be the exception to the rule.

My available information calls

for an X202 blank (Ilco's key blank and number) but if you cut the key on this blank, you will have a key that works everything with the exception of the ignition.

This is due to the raised blade design near the bow that stops full insertion of the key into the ignition by approximately 1/16", even though the blank will pass all the other locks without a problem *(see Illustration 11).*

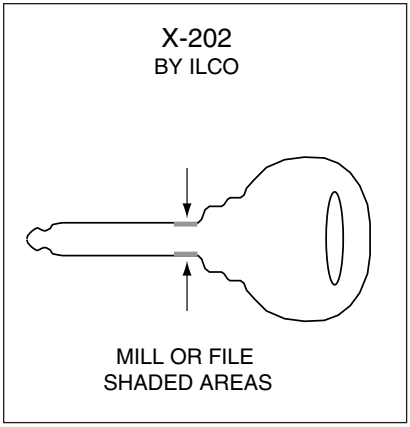

Illustration 11.

To allow the X202 to operate the ignition, mill, or file, the shaded areas of the blank as shown in the illustration. I have not found this to be a problem on any other Ford/Mazda's that use the X-202 except the one used on the Capri. Also, Silca's version of this keyblank does not have the raised area on it.

Jay Metzbower
Maryland

Ford Ignition Removal

I have found that a fast way to remove a Ford 10-Cut ignition lock and a quick way to get the customer back on the road when the key has been lost is to simply use a small wire with a hook on the end to reach in the ignition and remove the wafer springs one-by-one.

Then either rake the wafers lightly, or gently tap the housing around the lock. Either method will cause the wafers to align with the sidebar and allow you to remove the ignition for servicing or crank the car.

Once you have the ignition out of the car, it only takes a few minutes to decode the wafers, reload the springs and make a key. Best of all, you don't do any damage and you don't have to drill.

Lee Griggs,
E-Mail

Editor's Note: While I've used this method to remove these locks, Lee, removing the tumbler cap and replacing the springs is not always that easy. I always carry an All-Lock keyable Ford replacement lock

NOTES

Volvo Door Clip Removal

Specifically, this tip is for removing the door lock retaining clip on a 1985 Volvo, Series 200 without removing the door panel. It will probably work on other model Volvos also.

On the edge of the door, in line with the lock cylinder, you will find two screws *(see Illustration 12)*. These screws hold a box-type clip that keeps the lock cylinder in place. Normally, to remove the lock cylinder, you would have to remove the inner door panel and then remove the screws to release the clip, which would allow you to remove the cylinder.

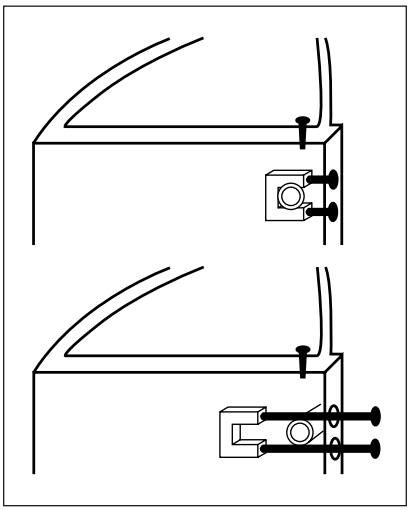

Illustration 12.

Rather than go to all that trouble, I found that if you remove the two screws, and replace them with 4" long screws, you can push the clip off the cylinder. Simply thread the longer screws in by a half a dozen or so turns, then using both thumbs (on each screw), push the clip off of the cylinder. The longer screws will hold the clip and keep it from falling into the door panel.

Since there are no connecting linkages attached to the cylinder, the cylinder pulls out very easily for servicing.

After servicing or generating a key, simply replace the cylinder, grasp the two screws (use pliers if necessary) and pull the clip back in place. Remove the longer screws and replace them with the originals.

In my opinion, it sure beats taking down the door panel.

Kerry Burket
Washington, DC

Editor's Note: To the best of my knowledge, this will work on many Volvo models up to about 1988. After that, Volvo began changing lock cylinders and adding electronics on many models. As with any service procedure, this one should be used with caution. Always check out the job before attempting any procedure and then proceed with caution. When in doubt —- pull the panel so you can see what you're dealing with.

Break Away Bolt Removal

I know that many tips have been submitted regarding the removal of the break-a-way bolts on most foreign car ignitions. However, I think that I have found a fast, simple and effective way to accomplish the procedure that will allow you to re-use the same bolts (in a pinch) if necessary.

I first drill a 5/32" hole in the center of the bolt, approximately 3/16" deep Then I use a small hammer to drive a T25 Torx bit

from a magnetic screwdriver into the hole until it bottoms out. Then, using a 1/4" wrench, socket or offset ratcheting wrench, I remove the bolt quickly and easily.

When the ignition is ready to reinstall, the same bolts can be used to fasten it to the column if you are out of replacement bolts. However, I recommend re-using the old bolts only in an emergency and replacing them as soon as possible.

If, when replacing the old bolts with new ones the Torx driver strips out of the hole as you're trying to remove the old bolts, just go to the next size driver and force it into the hole.

T. L. Cold
Canada

Datsun/Nissan Lock Repair

I receive a lot of calls to replace the C-16 series Datsun and Subaru ignition locks with the X-7 and X-6 keyways. The locks stop working when the shoulder stop wears away (on both the lock and the key) and the key bottoms out past the proper space alignment.

When I replace one of these ignitions I modify the new cylinder to prevent the problem from reoccurring and at the same time give the owners the advantage of a conventional shoulder stop and a tip stop.

I put liquid steel or a similar product in the end of the new plug at point A in *Illustration 13*. I put enough in it to make sure that the tip of the key bottoms out and forms the "<" shaped indentation necessary for the key to butt up against. I hold the liquid steel in place with my thumb while pressing the proper blank firmly against it until it hardens.

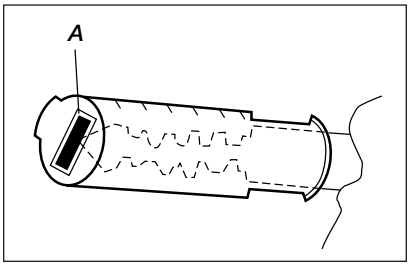

Illustration 13.

Once the new tip stop has solidified, I remove the blank and then reinsert it to make sure that all the wafers come to the shearline. To keep the key from sticking to the liquid steel, I spray a blank with WD-40 or TriFlow.

This simple modification prevents the shoulder wear problem from reappearing at a later date and does not require much effort.

Tom Spangler
Oregon

Hyundai Key Generation

When fitting a first key for a Hyundai Excel (1986 to 1989 and possibly later models) I have found that the ignition plug can be pulled out of the housing and the wafers read with very little effort.

Using the back side of a diamond pick to raise and hold the nylon key buzzer activator up, and a hook pick to release the plug retainer, the plug will pull out of the housing just slightly.

When it is out as far as possible, begin raking the wafers and apply light pulling pressure while pulling the plug towards you. It will come right out!

Both the nylon buzzer activator and the plug retainer are in line with the "K" in the word "LOCK" on the face of the cylinder.

Once you have the plug out (be careful not to lose and wafers - which can happen on an overly worn lock) insert a blank key, read the wafers and generate an operating key from your readings.

This can be done in much less time then by pulling any of the other locks on the vehicle.

Jim Parrie, CRL

E-Mail

Renault Slot Key Fix

A customer complained that their ignition key could not be inserted completely into the ignition, thus preventing them from starting the car. The key was an RN30 (X147).

Normally when you insert this key in the ignition, the key lifts the locking pin in the back of the ignition and allows it to fall through the hole in the blade of the key. Something was obstructing the movement of the locking pin and I couldn't determine what without disassembling the entire ignition.

The customer did not want to go to any expense on this nine-year old car and asked me to try to find an alternative to the expensive disassembly.

As shown in *Illustration 14*, I filed the hole out to a slot. This allowed the key to bypass the locking pin and allowed the customer to start the car. They drove off happy, and I haven't heard of any problems with their new-style key.

Joe Zolynski
Virginia

Editor's Note: The lock you are speaking of belongs to the Renault and is known as the slot key. The small obstruction they had is the steering wheel lock mechanism. A common problem is for this piece to be pushed back down into the lock, blocking full entry of the key (just as your customer has experienced). Your solution to the problem should not be considered a "Fix." It is not! The inoperation of that particular component may have undesired aftereffects that in some cases may be life threatening.

Your tip, however, is an excellent method for removing and replacing the lock.

Saab/Honda Key Generation

Here are two tips that I think might make things easier for other locksmiths:

A quick way to generate keys for Saab 900's and Honda Civics that have trunks (as opposed to hatches) is to read the code that is stamped on the top of the lock cylinder and impossible to see without removing the lock.

However, I have a Steelman Industries illuminated mirror with a 12" shaft that, with a little contortion lets me quickly read the code and be on my way.

When you have to replace an old deadbolt that has been with one-way screws that have been tightened to the max. don't get out your Un-Do-It tools. Use a 3/16" drill bit in your portable drill and drill right next to the screw. The drill will loosen them right up for easy removal.

Pete Gamble
N. Carolina

Mazda Ignition Repair

A call came in regarding a key that was apparently jammed in the ignition of a 1990 Mazda 929. The caller had tried to remove her key from the ignition after turning the car off and she could not get the key out. Before calling me, she had called a "friend of a friend" that happened to be a locksmith and who, as it turned out, was unable to get the key out of the ignition.

After I arrived and looked the situation over, I found that the key would turn to the START position, and ACCESSORY position without any trouble. In fact, except for trying to remove the key from the ignition, the ignition seemed to function properly. Looking closely at the cylinder, I noticed that although you could shut the car off and turn the key toward the OFF/LOCK position, the key would not quite turn to the OFF index on the face cap. I felt certain that if I could get the key to align with the index, the key would come out of the ignition

as it should.

Finally, I disassembled the column shroud to see what I could find out what might be causing the problem. There is a cable that comes out of the top of the lock that moves forward and backward when the shift lever is placed in DRIVE or REVERSE. etc. The cable seemed to be functioning properly.

My next thought was that there was a bent or crushed wafer that was preventing the key from being removed from the ignition. So, I removed the ignition and then removed the plug itself. Everything seemed to be fine with the ignition. Except when I reassemble it, the key would not come out of the keyway. I even went so far as to remove the shift lever. Again, everything appeared normal. However, when I reassembled the entire mechanism - the key would be trapped.

Disassembling the shift lever again, I noticed that there is a plunger type arrangement that was not moving far enough to let the lock plug return to the OFF/LOCK index. It came very close, but did not move in quite far enough. Closer examination of the plunger showed an impression mark where it was binding in the lock. I lightly filed this mark on the plunger and reassemble the whole thing and tried the key one more time.

This time the key worked like a charm. It turned to all positions easily and came back to the full OFF/LOCK position which allowed the key to be easily removed. My customer and I both went home happy!

Bill Wessel
California

Midget Possibilities

I was asked to make keys for a 1977 MG Midget. According to my Baxter code books, there is no code on the door key (Ilco S71B) or the ignition (X-51).

When I arrived at the job-site, I decided to try to make the door key from the glove box. When I removed the two screws that held it in, I found the cylinder has 9-1-6 stamped on it. My Baxter code calls for an "FS" series for these locks and I decided to try FS-916. It worked perfectly.

I tackled the ignition by removing the steering column shroud and steering column bolts to get to the break-a-way bolts. On the lock mounting plate, I saw the number, 426 stamped on it.

The Baxter code books called for a four number code (Series 2000 to 3000)for the ignitions on these vehicles. I decided to try 2426. It also worked.

I guess it really pays to try alternatives before disassembling the locks to read the wafers or try to impression them, etc.

Richard A. Holiday
Illinois

Lexus Tricked

My first adventure in Lexus Land, went like this:

The car was locked and the keys were in the trunk. After unlocking the car, the alarm went off and - as I found out - the electrical system shuts down leaving the trunk release button inoperable until the system is reset.

My first thought was to remove the battery cable and reattach it. That idea didn't work. After considering my options for a moment or two, I wondered if by removing the wafers from the door lock and then turning the lock with a key blank, I could "trick" the system into believing that the door had been unlocked by a key and allow me to use the trunk release button to open the trunk.

However, when I removed the door panel, I realized that all I had to do was remove the electrical switch from the back of the door

lock and then turn the actuator with a pair of needle nose pliers.

The on-board computer thought a key had been used which allowed me to depress the truck release button and open the truck for my customer.

I have since found that some trunk release buttons may be pushed in and "locked". You can still activate the trunk release mechanism by lowering the panel under the dash. The lock works like a push-button desk lock and all you need to do is locate the retainer allowing the lock to pop out to the unlocked position.

Rebecka Caster,
E-Mail

[Editor's Note: I have received several tips regarding keys locked in the trunk of a Lexus. Rebecka's was the first detailing her particular method. In future columns, I will print other examples of Lexus trunk lock by-pass techniques as long as they are not repetitive.]

Two Is Better Than One

Here's a tried and true tip that I came up with several years ago for extracting broken keys from foreign car ignitions, doors and trucks.

Use two spiral key extractors. Screw them down the milling grooves of each side of the broken key. Once the extractors are in tight enough to grab the key but not so tight that you can't pull them out of the lock, twist the two extractors together (like a twist tie on a bread bag). You can only twist one time but that is usually more then enough.

Not only does this "twisted" idea cause the extractors to grip the key more firmly, it also moves any wafers out of the way that might impede the removal of the broken key piece. On a trunk or door lock, I use a diamond rake tool to hold the dust cover open. By inserting it in the bottom of the keyway and turning it so it lays flat, it doe the job nicely.

Dominick Atanasio
E-Mail

Honda Key Extraction

Like many locksmiths, I have to contend with shoe stores, copy centers, convenience stores, etc., which have key cutting machines that are provided by Cole and Access. These "key cutters" often duplicate newer model Honda keys on the short HD-91 Honda blank which results in the customer getting the key hung up in the ignition and unable to push the lock in far enough to get the ignition into the "locked" position so they can remove the key. That brings them to me.

To remove these hung keys, I turn the ignition to the "Off" position, grip the head of the key with a pair of Vise-Grip pliers and gently flex the head of the key back and forth a few times until it breaks off! The key will most generally break off even with the face of the switch. The important thing is that you do not use too much force and pull outward on the key. If you do, there is a possibility of damaging the lock itself. However, just bending the head back and forth will accomplish your goal.

Then all you need to do is push in on the blade of the key, depressing the spring loaded ignition and turn the ignition to the locked position. Now you can extract the blade of the key from the plug and either duplicate that key for the customer, or "read" it and cut a new one by code on the proper blank.

It only takes a few minutes to solve this problem. Other methods could take an hour or more and some even damage the lock.

Everett L. Dobbs,
California

Removing A Stuck Nissan Ignition Key

My customer said that a co-

worker had entered her Nissan 280Z by mistake, inserted his key in her ignition, turned the ignition to the "ON" position and got the key stuck. When I arrived at the job-site, I found that his car was the same make, model and color as my customer's.

I have had similar situations in the past and have come up with the following trick to remove these stuck keys. I simply lock my impressioning pliers on the stuck key and begin to "impression" the key in a counter-clockwise direction.

Apply steady turning pressure on the pliers (not enough to snap the key) while rocking the key up and down as if you were trying to obtain impression marks. With patience and a gentle touch, the wafer(s) that locked up will move enough to allow the key to return to the "OFF" position.

I have had several instances similar to this one and the above trick has worked well for me every time. Just keep in mind that you are not trying to force the lock, you're only trying to "impression" the lock.

Dominick A. Atanasio
New Jersey

Peel The Rubber

If you get called out for a broken key in a Nissan door (or ignition) and the car is locked and the customer has the original rubber headed key, just peel the rubber back from the shoulder of the key to reveal the code number stamped on it. Then you can code cut a new key and unlock the vehicle.

If the customer does not have the original key, the code is, as most of you know, frequently written on a piece of paper and stuck to the wall of the glove compartment. This applies to older Nissan vehicles.

So, check under those rubber headed Nissan keys for the code numbers. You'll be surprised at how often you'll find what you're looking for.

Larry Bennett
California

Hidden Key Codes

I have often had customers bring me broken keys for Nissan and Toyota autos who only had the head portion of the key. If it is an original key, the code is often stamped on the upper part of the blade which makes generating a key simple.

I have come across situations where there was no visible code on the blade of the key. When that happens and I am sure the key is original, I peel the rubber back from the blade. Often the code is under the rubber head.

NOTES

Ford 10-Cut Ignition Tips

When servicing the 10-Cut Ford ignition cylinder, I replace the older style plugs with a new service package because the newer style plugs use two horizontal plugs to stake the spring retaining cap down. I doubt that you will see many of these caps fail due to the cap coming unstaked. To help me service these plugs, I use a modified Keedex K-7 Lock Block to hold the plug *(see Illustration 15).*

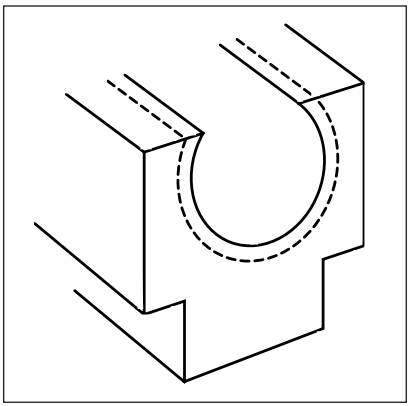

Illustration 15.

To modify the K-7 Lock Block, place a 10-pin plug in the block, mark the outline on the face of the block and rout out the outline

I use a metal rasp chucked into my Dremel 732 Flex Shaft that I added to my service van last year. I don't know why it took me seven years to add a Dremel. I have found out just how handy this tool can be for so many tasks necessary in my daily routine.

As for speeding up the process of removing the ignition cylinders with try-out keys, I color code my tryouts. I use fingernail polish to paint the bow of the key. With the tip of the key in my right hand, the left half of the bow represents the 5th space and the right half represents the 6th space.

I use white polish for any one or two depth. Red for any three or four depth, and blue for the fifth depth. Knowing the depth in the 5th and 6th space of the door now narrows the selection of tryout keys *(see Illustration 16).*

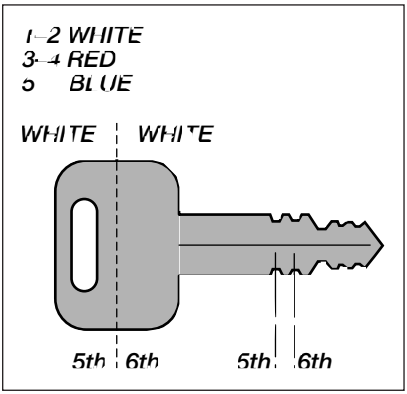

Illustration 16.

To decode the door lock, I remove the lock and using an uncut Ford blank, read the wafers in the lock through the drain hole.

Leo Koulogianes
Tennessee

Quick Tryout Keys

If you have a set of H51 Ford tryout keys for earlier Ford ignitions, you can duplicate them to make a set of tryout keys for older Ford doors, glove compartments and trunks (Using the H50 blank to duplicate on). These will also make excellent tryout keys for newer model Ford product trunks and glove boxes.

In order to duplicate the H51 tryout set onto H50 blanks, place your H51 in the left vise of your duplicator. Then place an H50 blank in the right vise with a shim behind it (I use the shim from my code machine) to properly align the H50 blanks

Remember that the H51 has two tryout keys on each blank (one on each side) to you need to flip each key over and duplicate each side to have a proper tryout key.

I have found these H50 tryout keys to be about 85% effective when making trunk keys or just opening locked vehicles.

Phil Lanier
N. Carolina

VATS Interrogation

Servicing a VATS ignition without an interrogator could present problems for the locksmith. However, I have found a way to do just that. The first thing I did was to acquire a used VATS ignition cylinder plug. I glued a key blank in this plug to facilitate turning and use it as a turning tool to test for the proper VATS code. Here's how it works:

First, after removing the steering wheel (and air bag if so equipped), I remove the ignition from the steering column and let it hang by the wires. Do not disconnect the wires.

Next I insert an uncut blank in the ignition that I just removed from the steering column.

Then, I take my turning tool - made from a VATS plug - and insert it in the ignition housing (be careful not to foul or pull any of the wires), engage the sector gear and turn the ignition ON. If the car starts, I have the right blank in the ignition. If not, I change the VATS key to the next value and try again. When I have the right key in the ignition, the car will start.

All I have to do then is code cut a key on the proper blank and the job is done.

Gene McCoy
Oregon

Editor's Note: If you service a limited number of VATS equipped vehicles each year, I think Gene's tip shows a lot of creativity and has merit. However, if you service VATS equipped vehicles on a regular basis, I believe you should avail yourself of one of the VATS interrogators. One of these interrogators and VATS adapter keys take a lot of guess-work and frustration out of servicing VATS ignitions. And, with the proper tools and equipment there is less chance of creating a problem for yourself as a result of improper service techniques.

Across The Car Tool

If you have an old CB whip-type antenna (102" long) tucked away in the garage or basement, why not cut it in two and make an across the car tool and a frameless window tool.

Cut the antenna into one 72" section and one 30" section - with a little bend at each end - these tools will reach across most cars or reach the door lock button of frameless windows.

To put a good bend in one of these antennas, use a propane torch to heat it and Vise-Grip pliers to make the bend. Be sure to dip the end in water or let it cool thoroughly before using or touching.

Len Wagner
Illinois

GM Cylinder Holder

You can make a simple fixture for holding a GM door or trunk cylinder out of a 5/8", 90° copper elbow, sweat joint that plumbers us *(see Illustration 17).*

Simply put one end of the elbow in your bench vise and apply enough pressure to flatten the radius a little. This will be the end

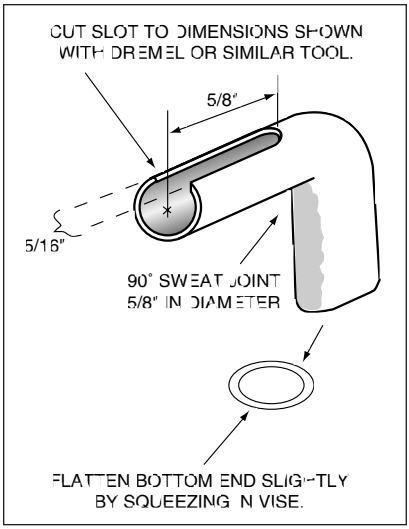

Illustration 17.

you will use to hold your fixture in place in the vise on your service truck or the bench vise in your shop.

As shown in the illustration, use a Dremel Tool, grinder or saw to open a slot 5/16" wide and approximately 5/8" long with the closed end being rounded as shown.

To use the fixture, simply clamp it in place in your vise.

Next take the GM plug and put pressure on the side bar with your finger while raking the wafers until the side bar depresses.

When the side bar "seats," continue applying pressure with your finger and slide the plug into your home-made holding fixture.

The fixture will hold the sidebar in the depressed position and allow you to use both hands to manipulate decoders, lights or to sight read the tops of the wafers to determine the bittings necessary to generate a key.

This is a quick and easy tool to make and the out-of-pocket costs are next to nothing.

Bob Davison
South Dakota

Transponder Key Quick Fix

Transponder keys are becoming quite prevalent throughout the car industry in Europe, and will apparently gain in popularity in the U.S. as well. This tip concerns the servicing of one of these units when a key has been broken and the proper blank or equipment to re-program the new key is not available.

One of our locksmiths was out working and had to deal with a broken transponder key. He chose this alternative as a temporary repair to get the customer on the road.

Utilizing both halves of the broken key, the locksmith duplicated the key on a compatible key blank. He then taped the broken bow of the transponder key onto the key that he had duplicated without a transponder bow on it. This allowed the vehicle - a Fiat Punto - to be started and moved either to the dealer for servicing or to the locksmith shop for repair.

Our shop has used this procedure in two separate instances now, and I see no reason at this point, that it would not work throughout the range of transponder keys.

As you may have noticed, the new transponder keys incorporate very large bows, which is understandable since the bows contain a portion of the electronics to make this type of system workable. However, this large bow gives the vehicle owner more leverage when turning the key and I believe that will result in more broken keys in the future.

George Watts,
London

Swivel Pin Extraction

I've seen several types of home-made rigs to remove the swivel pins from GM steering columns, including dent pullers and nuts with bigger nuts and screws.

The best thing I have found is the safe deposit box nose puller. It seems to me that this tool was made for this job. To keep from breaking screws, I went to the local hardware store and bought a half dozen stainless steel cap screws (the kind with the Allen head.) The ball bearing in the nose puller would seat in the head of the cap screw so the screw would not turn when I extract the swivel pins.

For those locksmiths that seem to be afraid of working on these columns, it is really not that difficult and there's good money in this type of work.

Steve Myslik,
E-Mail

[Editor's Note: Steve's right! There is good money in the repair of steering column related lock work like rack gear replacement, etc. However, before any locksmith undertakes this type of service, they should learn all they can about steering column service procedures. A good place to start is The National Locksmith's "GM Steering Column Service Course by Tom Mazzone and Tom Seroogy. The cost is only $95.00 and locksmiths that successfully complete the course get a certificate attesting to their GM Steering Column Certification! Check it out. Y'all heah?

Gas Line Fish Line

My least favorite method of opening a locked car (but sometimes necessary as a last resort) is to wedge the door and push or pull something to unlock the door.

For those times when there is no better way to do it, I have bought a five foot length of automotive gas line. I cut off the flared tips and remove the threaded connectors. This gas line can now be used as a bendable tool that can be used to trip whatever presents itself to unlock the door.

I've used it on electric locks, door handles, rocker buttons, vertical slides and when the engine is running, to lower electric windows. Once when the keys were locked in the trunk, I've pulled the trunk release and twice, when all else failed, I hooked the keys and fished them out.

Depending on the make and model of the car, I either bend a small hook on the end or make a point. I carry several wooden wedges of various lengths and tapers and use whatever is appropriate.

Berkley Ruiz, CPL
Georgia

Honda Trunk Release Bypass

I was called to retrieve the keys in a Honda Accord LX. When I opened the car, the keys were not in the passenger compartment but in the trunk. Unfortunately, the interior trunk release lever was in the locked position.

I have spent a lot of time in the local junk yard tearing old car locks apart for the parts and the experience. I picked this idea up from working on an older Honda.

With a small screwdriver, carefully pry the plastic cover up over the trunk release lever. Once the cover is removed, you will see a small screw toward the seat side of the mechanism. Remove this screw.

Use the screw or a small screwdriver under the edge of the lock cylinder and gently pry upward, working the screw around the edge. You will be able to pry the cylinder up about a quarter of an inch.

Now, rotate the lock cylinder counter-clockwise (toward the front of the car). This disengages the lock from the lever and allows you to lift the lever and open the trunk.

To put everything back together, simply reverse the process and you're done.

Albert W. Christopher, CRL
South Carolina

Roll Pin Removal

I used to dread being sent to a job where I had to remove a Nissan or Ford Escort ignition for repair or key generation. I just hated to try to remove the roll pins to remove the ignition cylinder.

I was taught to drill a 3/32" or a1/8" hole along side of the roll pin and then using a blunted ice pick or scratch awl, to pry the pin up and out. Not only was this difficult, I frequently wound up with holes in my hands or fingers when the ice pick slipped, or I would often cut myself on a sliver of metal when the ice pick slipped and gouged the housing. At any rate, removing these ignitions has been aggravating for me.

Now, I still drill the hole beside the roll pin, but instead of using an ice pick or scratch awl, I use a #10 or a #15 Torx screwdriver! Usually, I can get these pins out on the first try with the Torx and I leave my fingers intact.

The Torx screwdrivers have turned a normally thirty minute job into a ten minute job for me. If you try this, I think you'll be surprised at how well this works. Although I have not yet broken a Torx driver, I do use the ones that are guaranteed for life from the company you buy them from - just in case.

Robert Brown
Florida

Smoking Key

Trying to impression Ford an Chrysler locks late at night has been a problem for me. I discovered that if I used the parking lights on my van, the yellow light that they cast helped me clearly identify the marks.

If I have really trying key to impression, I use a magic marker to darken the blade of the key (remember "smoking" blanks?) and the marks really stand out.

Terry Suetter
Michigan

Three Point Progression

Progressing two unknown cuts to complete a key is usually a piece of cake for most locksmiths. However, many locksmiths find it difficult to progress three unknown cuts, as would be the case if you where to use the glove box lock to originate a first key for certain models of Mitsubishi, Hyundai and some others.

The easiest way to progress three unknown cuts is to have a prepared progression chart.

A Three Cut Progression Chart

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th Key
111	121	211	131	221	311	331	141*	411*	321	421	231
112	122	212	132	222	312	332	241*	412*	322	422	232
113	123	213	132*	223	313	431	341*	413*	323	423	
114*	133	214*	242	233	314*	432	441				
124	143*	224	342	333	324						
134	243	234	442	433	424						
144*	343	334									
244	443	434									
344											
444											

The following is a generic chart for a three space, four depth progression situation that might be encountered on many foreign and some domestic automobiles, light trucks and motorcycles.

The asterisk(*) indicates cuts that you can avoid making if the MAC's is only a two or does not allow a one cut next to a four cut. You can eliminate even more combinations when your last known depth is a one or a four.

At the most you will need twelve keys to obtain a working first key with this three cut progression chart. However, my experience has shown that mathematically only four keys will be necessary 50% of the time.

Mike Spencer,
E-Mail

NOTES

Better Light Source

Sometimes when I'm working on small parts or locks in my van, I find that it is hard to see into some of the smaller areas that I want to examine. I have a magnifying visor and several magnifying glasses in my truck but still found that I needed something better.

After a bit of thought, I built the "cheater" that you see in *Illustration 18* from an old goose neck type lamp that I found in the shop.

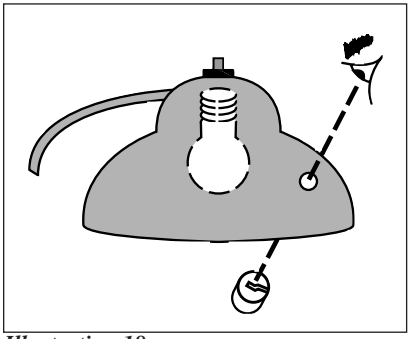

Illustration 18.

I drilled a 1/4" hole as you can see in the illustration and wired the lamp to work off of my van's battery (I had to go down to the motorhome supply place and buy a DC light bulb).

Now when I want to examine something closely, I just turn on my lamp, hold the piece under the hole and look down through the hole. The lamp also doubles as an extra light source over my work area when I need the light.

Hal Butner
New Jersey

Pick Gun Conversion

I always thought that it would be nice if I could make a pick gun that would move faster then a regular pick gun. I thought that these small battery operated scissors might do the trick.

With a little modifying to the blades of these scissors I made an economical, cordless, battery operated pick gun. *(see Illustration 19).*

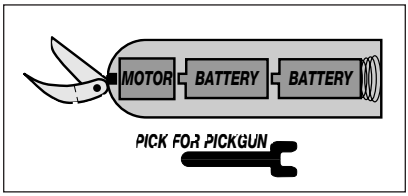

Illustration 19.

First, I cut off the top blade (the one that doesn't move) as close to the body of the scissors as possible. The blade that does move I cut to a shorted length (about half it's length) and drilled a 1/8" hole. Then, I put a screw with a washer on both sides and a nut on the back side. I took a pick from my mechanical pick gun and attached it to the blade of the scissors.

Just flip the switch, and you're into Power Picking!

Jessie Cobb
Oklahoma

Safe Lift

In the course of selling and servicing safes, I have to move a lot of heavy ones. Breaking these safes away from the floor where they have often sat for years can sometimes be difficult. The hard part is in raising the front of the safe high enough to get blocks under it so I can put my safe dolly in place to move it.

I thinking I have found the perfect tool for this job. I use a 4'

crowbar with the claw cut off as shown in *Illustration 20*. If you try to use the crowbar without cutting off the claw, you cannot get enough lift to insert a proper sized block under the edge of the safe.

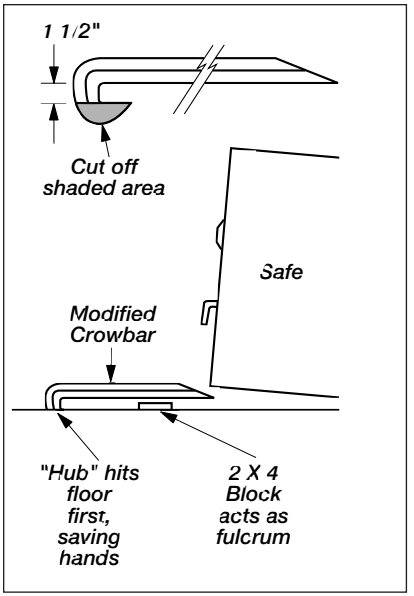

Illustration 20.

If you just cut the bar off straight, you can catch your fingers under the end of the bar when you push down on the bar to raise the safe. By leaving a nub on the bar, as shown you build in protection for your fingers.

When you encounter a safe where you cannot get the lip of the crowbar under it to lift the front, use a length of 2x4 lumber standing on its end as a fulcrum and put your crowbar under the bottom hinge of the safe. You can now lift the safe high enough to put a screwdriver or other spacer under the edge to hold it in place while you move your bar down to the floor to lift the safe edge high enough to insert a block.

Using a 4' foot crowbar in this fashion, with a length of 2x4 as a fulcrum, gives you all the lifting power you need to raise the fronts on most safes that you will encounter.

Tom Gallian, CPL
North Carolina

Foreign Key Shim

I have used both the Framon #2 and the HPC 1200 code machines to originate keys. On each machine, the manufacturer recommends cutting just one side of a double sided key, and duplicating the finished key from this single-sided key.

Tip gauged keys like the 5-pin Ford keys, etc. are not a problem since enough of the blade on the cut side is left to rest on the vise of the machine.

However, on Toyota and Nissan keys (TR40, X123, etc.) the distance from the edge of the blade to the edge of the groove is only .085". This will not allow you to simply turn the key over and cut the other side on either the Framon or HPC machine.

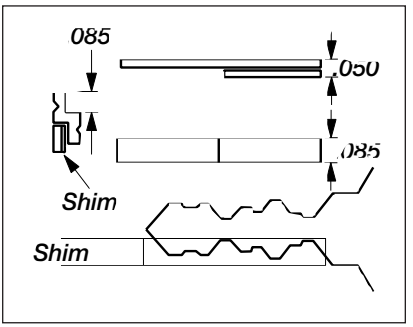

Illustration 21.

I make a shim by soldering a 1-1/4" piece of .085" stock on the top of a 2-1/4" piece of .085" stock *(see Illustration 21).* I use this as a shim to compensate for the metal removed while cutting the first side, keeping the key from tipping while I cut the other side - on the code machine!

Leo Koulogianes
Tennessee

Shim Holder

To make yourself an inexpensive shim holder, find a stiff, small diameter rod or tube about the same curvature of a standard shim. A length of wooden dowel or plastic tubing works well.

Then obtain a small rubber "O" ring which will fit tightly over the rod. Now, place the shim on the end of the rod and roll the "O" ring over the shim to hold it in place. You're now ready to shim open some locks.

I've found this to work perfectly and that it takes up very little room in my tool box since I store it inside a hollow follower!

Ted Swirsky
E-Mail

Spirolox Washer Remover

If you work with S&G mechanical combination locks, one of your pet peeves may be the removal of the Spirolox washer that holds the wheel pack to the shaft.

I have tried the Spirolox insertion and removal tool that was manufactured some time ago and have since tried small screw drivers lock picks, etc. - all with only moderate success. Even then, I sometimes poke myself with the sharp tool.

Here's a technique which may not be widely known that works. Obtain a common ball-point pen (preferably one with a metal tip since they last longer and work better), retract or remove the filler. Use the tip of the pen's body to engage the pointed end of the Spirolox washer and then simply lift and remove the washer *(see Illustration 22).*

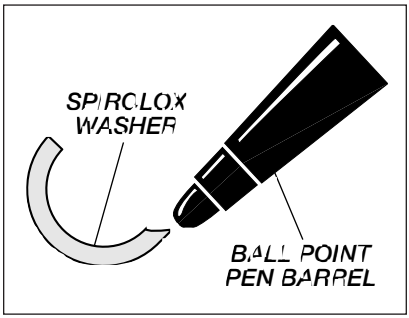

Illustration 22.

Presto! the washer is off with no gashed fingers or frazzled nerves!

Donald Shiles
Maryland

Six To Five Pin Cylinder Conversion

What do you do when you find yourself with a five pin cylinder and only a six pin plug and you have to make it work?

After looking around the shop for something to make a sleeve from, I found a 1/2" brass compression ferrule. By grinding and filing the tapered ends square I had a spacer that worked perfectly *(see Illustration 23).*

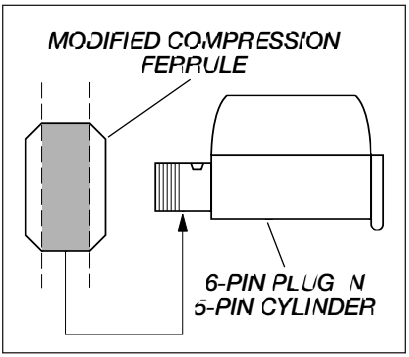

Illustration 23.

The modified compression ferrule took up the slack of the empty sixth pin space and after putting the retaining cap, etc. back on the cylinder and the cylinder back on the lock, I had a satisfied customer.

Harold Schak
Illinois

Kwikset Cylinder Removal Tool

While rekeying a Kwikset knob the other day, one of the blades on my Rytan cylinder tool broke. Not

having a replacement blade, I tried removing the cylinder with a couple of narrow beaded screwdrivers – in vain.

After a little thought, I came up with the following solution:

Using about a 4" strip of #14 AWG copper wire I put a tight 180° bend in the middle of the wire and opposing 30° bends about 1/2" back from each end of the wire *(see Illustration 24).*

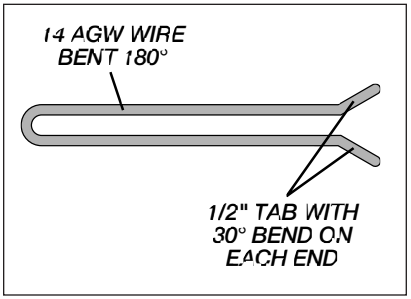

Illustration 24.

Holding the rounded end firmly with lineman pliers I inserted the new Kwikset tool into the knob, and with pressure from one hand holding the knob and the other hand holding the pliers, I rapped the handle of the pliers on the work bench and the cylinder popped right out!

Ron Rognlie
Minnesota

Homemade Plug Follower

Here's a way to make a cheap, yet effective, plug follower.

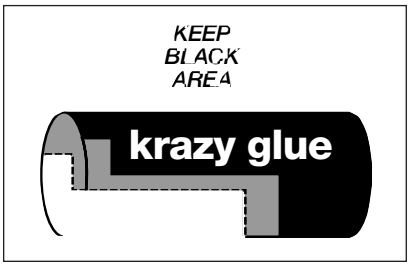

Illustration 25.

Use the case of an old Krazy Glue container and cut it as shown in *Illustration 25*. This unique follower can be squeezed to fit almost any cylinder.

A.M. Pollak
New York

Car Opening Tool

It seems that there are more and more car opening tools on the market every day. Often, you will find you need several different tools to open various models by the same manufacturer.

Illustration 26 shows a simple tool that I came up with, made from a piece of 1/4" rod about 30" long, that allows me to open most Ford and GM products simply and easily. Especially after some Good Samaritan got there before me and knocked the linkage loose.

To make this work well, you need a good light to look down inside the door panel and see where the rod comes off the back of the door handle (either back door or front door). Just follow the rod down to the latching mechanism and either push down on most Ford products or turn inward on most GM latches On GM products you can tell when your tool is in position because you can feel a "springiness" when you push down on the tool. At that point, simply turn the short end of

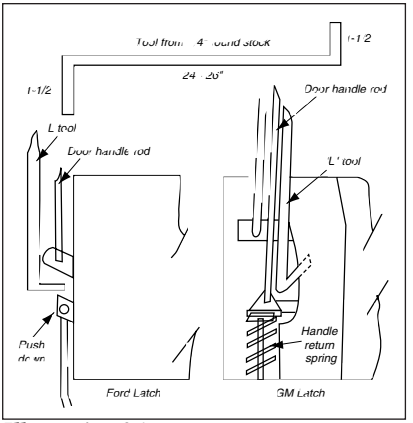

Illustration 26.

the tool into the latch and open the door. With Ford latches you place your tool as shown and push down.

It's always good to have back up methods available to help you accomplish your job. And, this is one that I'm glad to have found and share with others. I know this won't work on every vehicle you try it on, but I'm sure it will work on others besides Ford and GM.

G. D. Starling
Florida

Homemade Power Supply

I have found that when installing or repairing electric and electro-mechanical locksets, magnetic locks or panic/exit devices, it is handy to have a portable power source to check the lock mechanism after a repair or before powering up a newly installed system. Here's a way to make your own economical portable power supply by using three 9-volt batteries wired in a series *(see Illustration 27).*

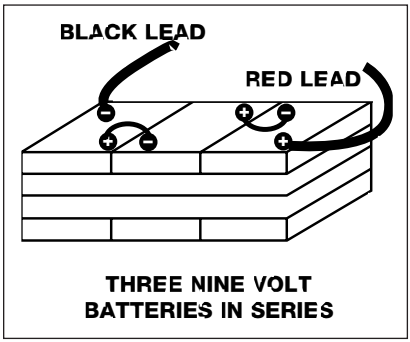

Illustration 27.

First tape three, fresh, 9-volt batteries together to form a pack. Next, make a positive lead by soldering an alligator clip to a length of red wire (6" to 12" long) and a negative lead with a length of black wire and an alligator clip.

Next, wire your three batteries in a series (which will give you a power supply of 27-VDC) by connecting the negative terminal of one battery to the positive terminal of the next battery. If you have wired them properly, you will then solder your red lead to the positive terminal of the first battery and the black lead to the negative terminal of the third battery

To test your 24-VDC lockset, simply attach the alligator clips to the appropriate leads and check the function of the lock, panic/exit device, magnet or strike. I have even found this to be an effective way of testing Von Duprin's EL bars, if the batteries are really fresh or by using two portable power packs.

John Matteson
E-Mail

Editor's Note: By salvaging the "clip pads" (that connect an electronic device to a 9-volt battery power source) from old exit alarms or other hardware, you could make a reusable harness for a portable power supply rather then having to solder new connectors each time you wanted to make a fresh tester. Also, by using the proper voltage batteries, you can make relatively cheap testers for any VDC lockset you were working with. Good tip John!

Homemade Nose Puller

I just had my first call to open a safe deposit box. And, I did not have a nose puller to do the job with. Since my customer needed the job done "today," I knew I didn't have time to order a nose puller from one of my suppliers. Since this was my first call for this type of work, I was anxious to take on the job and a little apprehensive at the same time. Especially since I did not have the "proper" tools to do the job with. You know what they say about necessity being the mother of invention. I decided to make my own nose puller!

On the way to the bank, I stopped by the hardware store and bought a

10-24 bolt, 3" long, a 10-24 wing-nut, a fender washer, a 10-24 tap and a 1" plastic plumbing coupling.

Once inside the vault, I drilled a #25 hole in the nose of the lock and tapped that hole with the 10-24 tap *(see Illustration 28)*. Then I assembled my custom-made nose puller as also shown in illustration two, by first placing the plastic (to keep from marring the door) coupling over the nose. Then I placed the fender washer over the nut, inserted my 3" bolt with the wing-nut on it and tightened it down just enough to hold everything in place. Next, I inserted and turned the guard key and began tightening down on the wing-nut of my puller. The nose came right out of the horn.

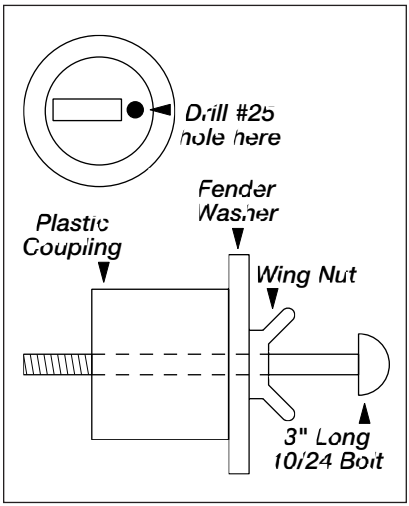

Illustration 28.

After that, it was just a matter of manipulating everything to retract the bolt. The customer even commented on how quickly I did the job and was impressed that I had "all the right tools!" My home-made nose puller cost me less than $4!

Joe Stofferhan
Minnesota

Shearhead Bolt Extractor

Articles and tips on removing foreign car ignitions such as Nissan and so on with those troublesome break-a-way screws have all been interesting and informative. However, I think I have found the perfect way to remove those headless bolts quickly and easily.

In addition to being a locksmith, I like to do woodworking whenever I have some spare time and it was while looking over "THE WOODWORKERS' STORE" catalog (800) 279-4441 that I found an unlikely source for a tool to back these bolts out of the collar that holds the ignition cylinder to the column. It's a reverse-tooth cutter or screw extractor (Part #92338. Retail $12.95) that will make quick work or backing those screw out.

You do have to use a punch or other tool to "break" the headless bolts loose, but once that is done, simply chuck the extractor (I've found that the 3/8" works best for me) into your cordless drill and back those suckers right out - right now!

I've found these to be so effective that I ordered several of them to keep in my tool box.

Norris Morvant
Louisiana

Trunk Popper

Here's how to make two "Trunk Poppers" for only $14 plus sales tax.

Stop by your local Radio Shack store and purchase one package of coiled Cord Test Lead (Stock # 278-750B) for $5.95, one package of Wire Piercing Probe Adapters (Stock #278-715A) for $3.29 and two Heavy Duty Lighter Plugs (Stock #274-335A) for $2.39 each. Although the Wire Piercing Probes are not necessary, they make getting a connection much easier.

Attach one of the test leads to the positive connection (the tip) of the plug), then attach the probe to the

lead. Now all you have to do is plug into the car's cigarette lighter and touch one of the wires behind the trunk release button. If the trunk does not pop open immediately, then push the button to complete the circuit.

Lenny Wagner
Illinois

Easy Thumb Turn

Here's an easy way to make a thumb turn key for a customer from an old Kwikset or Schlage single cylinder thumb piece.

First duplicate the customer's key onto a blank and then cut or file the blank down as shown in *Illustration 29*. Insert the specially prepared key in the slot in the thumb piece as shown and use an all purpose epoxy paste to hold it in place. Once the epoxy has hardened, simply insert the "thumb turn" in the inside cylinder of the double cylinder deadbolt.

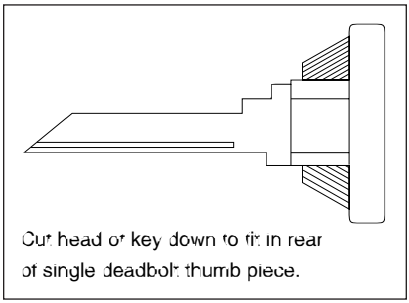

Illustration 29.

This "trick" will work regardless of the type of key (Y-1, KW-1, SC-1, etc.) or make of deadbolt. It also makes an excellent large bow key for folks that have arthritis or are disabled.

Robert Purdy,
California

Car Opening Tool Saver

I was opening a vehicle the other day and the tool I was using slipped out of my hand and dropped down into the inside of the door. If you've ever had this happen to you, I know you can appreciate how I felt. At any rate, I found a simple way to keep this from happening to me again.

I went to the hardware store and bought a couple of flexible, rubber fender washers. The washers were 1" O.D. x1/16" thick and have a hole in the center that is approximately 3/16" in diameter. They cost me 45¢ a piece; which is a cost-effective solution when you consider how long it takes to tear down a door panel to retrieve the tool that is trapped in there.

You can see by *Illustration 30* that I slip the fender washer over the upper end of the tool prior to inserting the tool in the door. Once the washer is in place it is practically impossible for the tool to drop inside the door panel. Even if you let go of the tool, the washer will hold the tool in place for you.

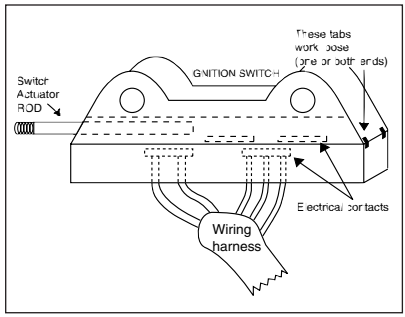

Illustration 30.

If you wish to make your own washers, check the plumbing department where gasket material is sold. I have found the material in 6"x6" sheets and various thicknesses. These sheets sell for about a buck a sheet and you can make any number of opening tool holders in various shapes and sizes out of a single sheet.

John Marske
California

Shim Repair

Here's an idea I have been using for about 20 years to extend the life of my shims and make them work better, rather then throwing the old ones away.

Lay the old shim on a flat steel surface and hammer the shim until it is relatively smooth again. Hammering the edge of a new shim will help improve its efficiency.

If your having trouble with shims slipping off to the side as you shim the lock, Use a pair of scissors to cut the end of the shim into a slight cure as show in *Illustration 31*. Then, hammer the edge smooth as above.

Now the shim will track straight and true.

Joe Adamo
California

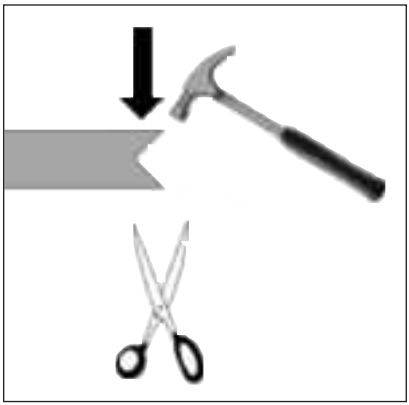

Illustration 31.

Quick Key

Occasionally we get a distress call from a business customer where the plug has come completely out of the cylinder. The customer is in a panic because they have springs and pins all over the place and the door is still locked.

As you are aware, the situation is generally caused by the tailpiece on the back of the plug falling off because the screws came loose. The idea, of course, is to quickly unlock the door for the customer so they can proceed with their opening - and you can repair the problem.

To help facilitate this type of opening, we developed a small tool to quickly manipulate the lock and open the door for the customer. It is a 2mm size Allen wrench that we have bent to just the right dimensions *(see Illustration 32)*. This tool is small enough to fit in your pick case and although you won't need it often, it's nice to have it available when you do.

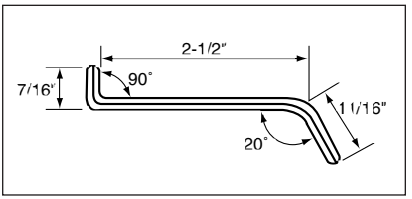

Illustration 32.

As you can see in the illustration, the shaft is 2-1/2" long. The smaller end (7/16") is bent to a 90° angle. That end is used on narrow stile, aluminum doors with Adams Rite or A/R type mortise cylinders. The end fits right through the plug hole and functions exactly the same as the tailpiece would have had it not fallen off. Just a quick flick of the wrist and the door is unlocked.

The longer end (11/16") is used in traditional type mortise cylinders that use the longer, standard style (Yale, Russwin, Schlage, Segal, etc.) tailpieces. That end must be bent to a 120° angle because the longer length won't fit through the plug hole if it is bent to a more acute angle.

The tool is simple to make. A vise, propane torch to heat and a pair of pliers to bend are all you need. Test your new toy in a cylinder with the plug removed. If it needs adjustment, simply file and rebend as necessary. You'll be impressed at

how easily the tool works and the customer will be impressed when you prove to be the person "with the correct tool for the job."

Joseph T. Bergen
New Jersey

Easy VATS Decoder

Here's a tip that can save money for a locksmith that wants to do VATS work but doesn't feel they want to spend, or can't afford to spend, money for a VATS decoder. The good news is that this decoder will decode regular VATS keys as well as the new double sided VATS.

Purchase an OHM meter at any hardware store or Radio Shack. Care-fully remove the clear plastic face cover that protects the gauge. Zero out the needle with the adjustment screw. Put a VATS key between the probes and mark or scribe a line where the needle stops. At the top of that line, mark or inscribe the numerical value (1-15) for that key blank.

Do this with all 15 keys and you now have a VATS decoder. Put the cover back on and you're ready to start decoding VATS keys.

I made mine back in 1986 when the VATS system first came out on the Corvette. Since then, I guess I've decoded hundreds of VATS keys with 100% accuracy.

Just make sure that each time you use your decoder you "zero" the meter out.

Kenneth C. Eastwood,
Utah

Editor's Note: Ken's tip is valid and will work well, and it is an economical approach. For those of you who might not want to bother with taking the face plate off the OHM meter, decoding each key and marking the meter, here's a conversion chart of VATs-to-OHM's values:

VATS OR KEY #	*RESISTANCE IN OHM's*
1	*402*
2	*523*
3	*680*
4	*887*
5	*1,130*
6	*1,470*
7	*1,870*
8	*2,370*
9	*3,010*
10	*3,740*
11	*4,750*
12	*6,040*
13	*7,500*
14	*9,530*
15	*11,800*

Paper Clip Shim

While duplicating a key for an older Yale lock, I found that the copy key and the new blank would hot hold properly when clamped into my machine's vise. Not having anything else to shim the blanks with, I tried using a plastic coated paper clip.

When I bent the outside wire to about a 90° angle (away from the loop) I found that the plastic coated wire fit nicely into the narrow groove of the key. When I tightened the vise down, the plastic coated clip held both keys securely allowing for successful duplication.

I also found the end with the loop is an excellent shim for cutting a double sided key as it fits perfectly in the "offset groove" which allows my machines vise to get a firm and solid grip. The plastic coating on these paper clips seem to offer a better grip then a plain wire shim. And, they won't mar the customer's key or the blank you're duplicating.

Richard E. Bentley
Missouri

Mortise Cylinder Clamp

Here's a simple jig that you can make with a piece of scrap lumber, a bolt and a wing nut for holding mortise cylinders steady while you work on them.

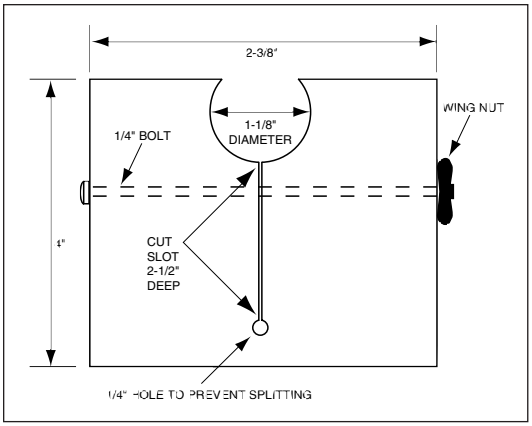

Illustration 33.

Use a piece of scrap lumber 4" long, 2-3/8" wide and 1 1/4" thick. As shown in *Illustration 33*, drill or cut a 1-1/8" hole at the top edge of the piece of lumber. At the bottom of the cylinder hole, use a saw to cut straight down through the wood approximately 2-1/2".

Now measure down 2-1/4" from the top edge of the and drill a 1/4" hole completely through the block from edge to edge. Insert a 3" or 4" bolt through that hole and put a washer and wing nut on it.

To use the jig, simply insert your mortise cylinder in the large hole at the top end of the jig, and tighten the wing nut until the cylinder is gripped tightly in the jig. The jig will firmly hold the mortise cylinder and allow you to remove hard to turn screws or whatever is required with both hands free to do the work.

Royce Evans
Ohio

Editor's Note: Royce's idea is a workable one. I took the liberty of adding one more thing to his jig and that is the 1/4" hole at the end of the vertical saw cut. This hole will allow you to put more torque on the wing nut and bolt while lessening the chances of splitting the wooden block. Hope you don't mind my two-cents worth Royce!

Fish Hook Key Extractor

I'm an avid fisherman and have found a practical locksmith use for some of my old fish hooks. They make excellent key extractors.

Just cut the eyelet off the one end and use a propane torch, a vise and Vise-Grip pliers to straighten the curved end of the hook.

You can use a pin vise or an Exacto Knife handle to hold the straightened shank of the fish hook while you use this recycled fish hook to "fish" broken keys out of keyways, hold dust covers open and all sorts of little tricks.

Just suit the size hook to the job that you want to do.

Larry P. Brown
Ohio

Emergency Spindle Extender

While fitting a new lock to a Diebold safe, I found that the spindle on the dial was too short for the job that I was doing. I called the shop and had them send me out an extension kit that can be purchased for just such a situation. They sent me the spindle extension that I needed, but it did not have the collar that connects the two pieces.

Since we had to get the customer back in service and it would take a couple of days to have the proper part shipped to us, I came up with the following solution.

Finding an old drive wheel in my "parts" box, I milled the threaded center portion out as a collar, this would join the two spindles together. All I needed at that point was a spare spline key which I also found in my "parts" box.

I screwed each portion of spindle about half-way into the collar and

secured each with a spline key. It worked great and my customer did not have to wait for a "special order" item to arrive before they could lock up their safe.

Steve Kaschimer,
Arizona

Lock Case Drill Template

I was asked to open a floor safe for a convenience store when the previous manager had been terminated and would not tell anyone what the combination to the safe was. The supervisor wanted to know if I could open the safe without destroying the door, I told him I would try.

The only markings on the square door of the safe was on the dial which indicated the lock to possibly be an S&G 6730. There was no manufacturer's name on the lid, but the door resembled a Gardall square door. I tried manipulating the lock without success and decided that the only course of action was to drill a scope hole.

Although I was not certain of the make of the safe, I assumed that the lock was mounted RH, and that there would be hard plate. Both assumptions proved correct. To drill a scope hole without going through the hardplate, I decided to drill for one of the mounting screws that held the lockcase to the lid. I thought that by drilling out the screw (which I figured had to penetrate the hardplate) I'd have a good scope hole into the lock case.

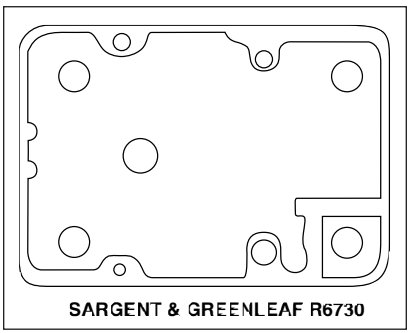

Illustration 34.

To do this as accurately as possible, I used an old 6730 case that I had on the truck. I aligned it like you see in *Illustration 34*, and drilled a 13/64" hole in the lower left hand corner of the lock. As it turned out, I was dead on the money. As the drill caught the mounting screw, it automatically backed it off into the lock case.

When I inserted my scope, I had an excellent view of the wheel pack and simply dialed the gates into view and transferred the numbers to the drop-in. The entire opening took about an hour (including the manipulation time) and the repair was easy enough to do. Besides, I saved the customer the cost of a new lid. I still don't know the name of the safe lid manufacturer but I do have a happy customer.

John Hipplewhite
Massachusetts

Fabricating An Emergency Change Key

An old Navy chief that I served under was forever telling us there was a right way, a wrong way and the Navy way to do a job. I'd like to also add there is the "Murphy Way" as well!

I was called out to meet a company representative at a central location to change the combination on six floor safes. No problem, right?

When I arrived, I grabbed my change key pack, screw-drivers and a small flashlight and proceeded to do the job. I looked at the backs of the units and saw that all had LaGard style change key holes. When I opened the case that I keep my change keys in, I could not find my LaGard change key! It wasn't in the truck either!

Since the company needed the safe heads back in the stores ASAP, I had to come up with a way to change the combinations without the proper change key. I hit upon

the idea of taking the back covers off of the units, aligning the gates, bringing the wheel pack around to the change index hole in the top of the head and using a piece of flat spring steel (about a quarter of an inch wide) to unlock the wheels.

First, I ground a tab on the end of the spring steel that would fit into the hole under the wheel pack *(see Illustration 35)*. With a little grinding and filing along the length of the spring steel, I had a tool that would unlock the wheels. Then, with the wheels aligned under the change key hole, I re-attached the cover plate, inserted my custom change key in the hole and unlocked the wheels. The combos were then changed just like I would ordinarily have done.

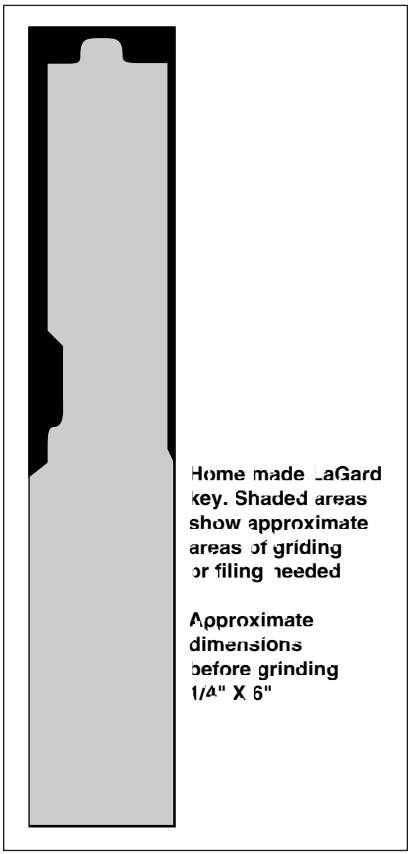
Home made LaGard key. Shaded areas show approximate areas of griding or filing needed
Approximate dimensions before grinding 1/4" X 6"

Illustration 35.

I don't recommend trying this on a regular basis, but it did get me out of a fix and everything worked the way it was supposed to in spite of having to do the job "Murphy's Way." To top the whole experience off, I found my LaGard change key on the motor cover of my van, just where "Murphy" put it the last time he used it!

Timothy Johnston
Massachusetts

Wheel Puller Pinch

My brother had broken his wheel puller and came over to borrow mine for the day until his new one arrived from a supplier down state. He wasn't gone ten minutes when the phone rang and the caller told me he needed a set of keys for a 1986 Chevrolet!

Not wanting to lose the job, I told the customer I would be there within the hour and immediately began rummaging through the shop to find something to pull the wheel with. Using a piece of flat 3/8" plate steel three inches wide and about eight inches long, I drilled a 13/64" hole in the center and tapped it to accept a 1/4 X 20 bolt *(see Illustration 36A)*. After threading the bolt through the plate, I used a 1/4 X20 sex bolt that I had cut down to 3/4" *(see Illustration 36B)*. This was to act as a buffer between the bolt and the tip of the steering column shaft to prevent possible damage to the shaft.

With my home-made wheel-puller, a roll of duct tape and a couple of pieces of cardboard, I was ready to tackle the GM wheel in my customers car.

After removing the horn pad, safety clip and steering column nut, I laid my wheel puller over the shaft and aligned it with the spokes of the steering wheel.

Next, I used my pocket knife to cut two strips of cardboard about 3"

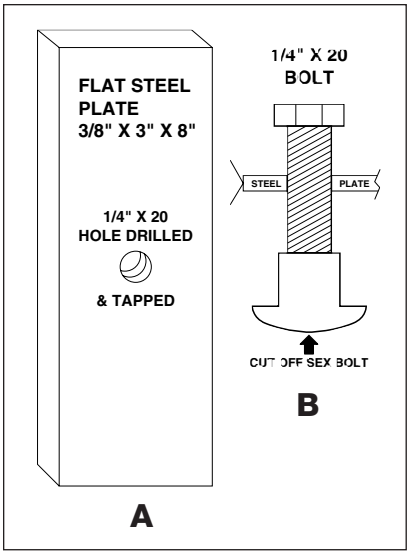

Illustration 36 A and B.

X 6" and wrapped the cardboard around the wheel's spokes and the puller's ends. I secured the cardboard with five or six turns of duct tape on each side. The cardboard was to keep the tape from sticking to the steering wheel.

Once I had everything in place, I began to tighten the bolt down while applying pressure on the steering wheel. Although the tape allowed a lot of play in my puller, the wheel came loose and I was able to lift it off the shaft and service the ignition in the normal manner. My biggest concern was possibly breaking the wheel spokes or cracking the plastic housing around it. Apparently with the cardboard acting as a cushion and the flat steel plate laying firmly on top of the cross arms, damage was avoided when I very gently applied pulling pressure to the wheel. Regardless, I was happy to get my puller back from my brother when he received his from the supplier.

Jesse Ward
New York

Save Those Bottle Caps

Here's an easy-to-make device that I find helpful whenever working on a lock where I need to keep the springs and pins in order. This simple device stores and keeps the top pins and springs from any cylinder separate and accessible.

Use contact cement (or epoxy) to fasten five or six soda bottle caps together in an arrangement like you see in *Illustration 37*. After gluing or epoxying the caps, you can hold them in position by using a rubber band wrapped around the outside of the group of caps.

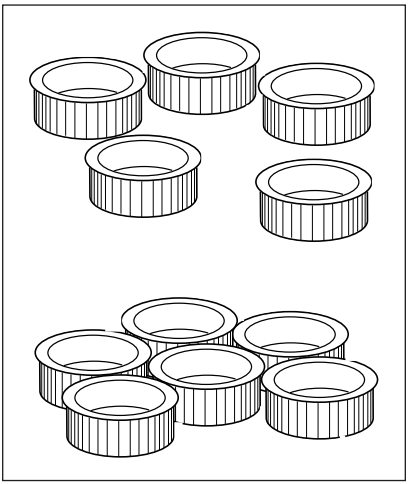

Illustration 37.

By gluing or epoxying a piece of fine grit sandpaper or rubber to the tops, you can prevent the device from sliding around on the work bench. By numbering the tops from one to six, you'll know at a glance where each set of pins go.

Eddie Bolden,
Illinois

Bypass The Roll-Tops

After spending too much time and wasting too many key blanks trying to open a very old roll top desk, I promised myself that I would find a better way to accomplish this onerous job in the future.

Since discovering my better way,

I have opened several of these desks in the last few years almost as quickly as if I had an actual key.

The majority of these roll top desks have spring latch locks that lock when closed. The key for the majority of these locks use key blanks similar to ILCO's #654 *(see Illustration 38A).*

The tool I discovered was made from an old screwdriver and works very well on a variety of this type of lock. As you can see in *Illustration 38B,* the screwdriver I used had a 3/16" shaft. I cut about 1" off the end (getting rid of the tip) and drilled a 1/16" hole about 5/32" from the end of the shaft. I inserted a 1/16" roll pin about 7/16" long in such a manner that the protruding ends were even. Then, I filed the

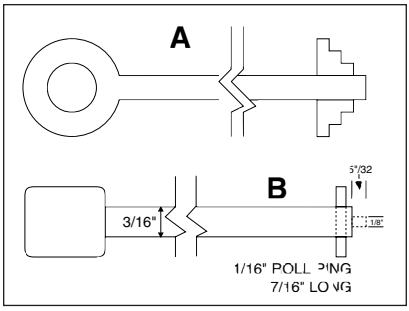

Illustration 38.

end of the shaft to about a 1/8" diameter.

To use the tool, I insert it full into the lock while holding an opening pressure on the tool tip. I Work the pick tool clockwise and then counter-clockwise (a back and forth motion) and, at the same time, work the tool in and out just slightly. I can easily feel the lock open, releasing the roll top.

Jim Ripley, CML
Oklahoma

Now, That's A Wedge

A very effective and reasonably priced wedge for viewing the inside of car doors can be obtained from your local chain-saw dealer. Ask for the longest plastic felling wedge that they can order for you. Felling wedges are used to prevent the pinching of the saw or for directing the start of the tree fall.

Felling wedges are made of high impact plastic. They are very strong and not abrasive. My choice is made by STHIL.

The model that STHIL makes is almost nine inches long and nearly four inches wide. When cut laterally, one of these wedges yields three bright orange wedges that are darned hard to miss when you leave one in the window of a car.

You can drill holes in the side for a hanging loop so you can hang them on your tool board. I even drill a few holes in the top to accommodate my Benda-Lite.

As an added bonus, they are wonderful tools for prying and wedging the top of car doors. Their long taper makes them handy for many other applications.

Duane A. Miller
California

A Lightning Rod

Here's a handy lighted plug following gadget I made using a MAG Silhouette flashlight, a 1/2" I.D. copper sweat union and a piece of 1/2" O.D. aluminum tubing about 2-1/4" long.

Force fit the sweat union over the end of the flashlight and if necessary, secure it with some Crazy Glue or epoxy. Insert the aluminum tube in the other end of the sweat union but don't glue it or permanently secure it in place. You should now have a contraption that looks like the diagram in *Illustration 39.*

You can use the aluminum tubing by itself as a simple plug follower, or you can use the combination as a lighted follower to replace the springs and top pins in any type of standard mortise, rim or key-in-

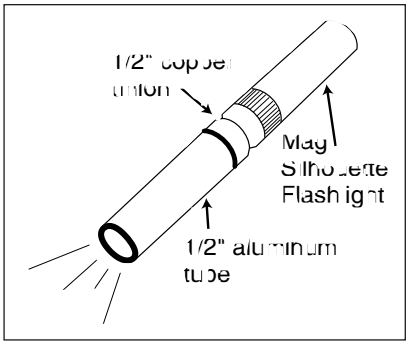

Illustration 39.

knob cylinder.

To use the lighted follower, turn the light on and insert the follower in from the rear of the cylinder stopping at the number three chamber. Install the spring and top pin and push the follower to the second chamber, etc. When you have the first three chambers pinned, hold the aluminum tube and pull the light and union off.

Now, attach the light and union to the other end of the aluminum tube (the end nearest the front of the cylinder) and push the aluminum tube (or pull) until you can see the number four chamber hole. Insert spring and pin, push the follower to the next chamber and repeat until you have all the top chambers pinned.

Having the inside of the cylinder lighted certainly makes pinning easier. And, you can make this one for only a few bucks.

Bob Davison,
South Dakota

[Editor's Note: Bob's trick works slick as can be. A lighted follower can be especially helpful to folks like myself who's bifocals don't want to focus properly when looking down the inside of a six or seven pin cylinder and trying to get the top springs and pins into place. I have found that even the MAG Silhouette flashlight by itself can make an effective lighted follower. By using the aluminum tube as Bob did and a fluorescent plastic rod like Don Harmon showed us last year on a different type follower, you don't seem to get as much glare from the light as you do when you use the Silhouette by itself.]

The MS Fixture

Royce Evans sent you a tip on how to make a cylinder holder from a piece of lumber and a long carriage bolt (See Technitips, The National Locksmith February, 1996.) I use old Adams Rite MS deadbolts.

If you take an old MS lock and replace the set screw with a longer screw, you can screw in a cylinder and use the set screw to hold it in place while you service it.

You can separate the two halves and have two ready-made mortise cylinder jigs. In addition, you can clamp the piece(s) in your bench vise or bend the bottom portion so that it can stand alone. These old MS locks are plentiful and don't really require modification since you can clamp the whole lock in your vise if you want.

Because they hold the cylinders securely without allowing them to move around, you can perform almost any service work you need to without the cylinder getting away from you.

Gonzolo Benavides,
Texas

Installing A Panic Bar On Double Doors With No Astragal

I was called to install a panic bar on double wooden doors which had no astragal. When I arrived at the job sit, I realized I did not have the proper strike. In my truck I found an old Adams Rite 4590 Latch Paddle Operator which I used as a substitute. Using a cut off grinder and a hacksaw, I shaped the handle to the approximate dimensions of a Sargent 644 strike, installed it on the inactive leaf and found that it

worked fine. The reason for this abrupt substitution was because the Fire Marshall was going to close the operation if the doors could not be properly secured. The proper strike was later ordered, and I kept the Adams Rite substitute as an emergency backup, should this situation occur in the future and I find myself without the proper strike once again.

Tom Seoul
Minnesota

Shim Picking Euro-Profile Cylinders

Here's how I solved a problem involving a double euro-profile cylinder to which the owner had lost the key.

Having picked one side of the cylinder — with some difficulty I might add — and thinking to myself as I removed the plug and pins, "I've got to do this to the other side, too! There's got to be a better way."

My solution was to use a 1/2" wooden dowel which is slightly smaller then the plug of a euro-profile cylinder, a fact that allowed me to use Cello tape to tape a shim

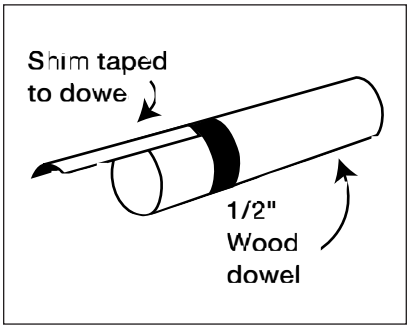

Illustration 40.

to the end of the plug *(see Illustration 40).*

All I had to do now was shim pick the other cylinder by inserting the dowel with the shim attached to it through the empty cylinder and work each pin in the locked cylinder from back to front. It was over in seconds!

Once I had the second plug out, I replaced the dowel rod with a standard follower and proceed to re-key the lock in the normal manner.

Tony Vinton,
New Zealand

GM Capping Tool

Here's a GM capping tool that I made from some scrap wood, a piece of rubber and an old Kwikset Cylinder Removal Tool (part #1467).

Illustration 41, shows how to assemble these easily obtainable parts to make an effective and attractive capping tool for GM, and with various adopters a capping tool

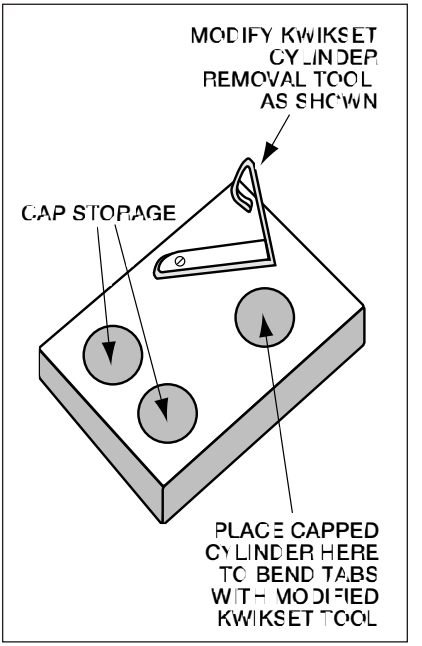

Illustration 41.

that will accommodate other makes as well.

The two 1-1/8" diameter holes that you see next to each other are drilled about 1/2" deep and hold five chrome and black GM caps each. The 1-1/8" hole that is in the corner of the tool

by itself is drilled to a 1/4" depth and is the hole that is used for capping.

To make this capping tool, find a piece of lumber 1" x 3-1/2" x 5" in diameter and drill two 1-1/8" holes to a depth of 1/2" and one 1-1/8" hole to a depth of 1/4" as shown. About 2 -1/2" from the end of the board and about 3/4" in from the edge, drill a hole to accept a #8 stove bolt nut and washer. Sand the board smooth and shellac, lacquer or urethane as desired.

Next, bend a Kwikset Cylinder Removal Tool as shown in the *illustration* and when the base has dried, attach the Kwikset tool to the base with the #8 stove bolt. Make sure to put a washer between the Kwikset tool and the surface of the base which will prevent the tool from scoring the base.

Next glue the piece of rubber to the bottom of the base. This will keep the capping tool from sliding around on the work bench or in the van. Finally, cut a round piece of rubber to fit the diameter of the 1-1/8" hole. This is to give the face cap a mar resistant surface to rest on as you bring the capping "slide" across to bend the tabs down on the cap.

By using various "adapters" like key covers, and other readily available materials, you can fit caps on both foreign and domestic autos.

Lee Whiteford
California

[Editor's Note: Lee sent me one of his GM Capping Tools. It is simple in design and easy to use. Best of all, it really works. However, for those of you who do not want to take the time to make your own capping tool, Strattec (formerly Briggs & Stratton) offers a GM capping tool with a plug holding feature for about $50. Strattec also has a capping tool for quickly replacing the face caps on the new Ford 8-cut door and truck locks. Thanks for the tip Lee. Read on for another tip on a home-made tool for staking face caps.]

Alternative Capping Tool

Sometimes when staking face caps on various automotive locks, I wish that I had a third hand to hold the cylinders still and the face cap in place while I bent the tabs over to hold the cap to the cylinder. Well, I came up with an idea using a piece of wood 2" x 8"x 6" long. I use this large of a block for stability.

First I covered the wood block with a piece of terry cloth (you can use any soft material to prevent the face caps from getting scratched). Then using three wood screws for each diameter face cap I wanted to work with, I placed the screws in the 9, 12 and 3 o'clock position *(see Illustration 42)* and tightened them down to the proper height for each type of cylinder.

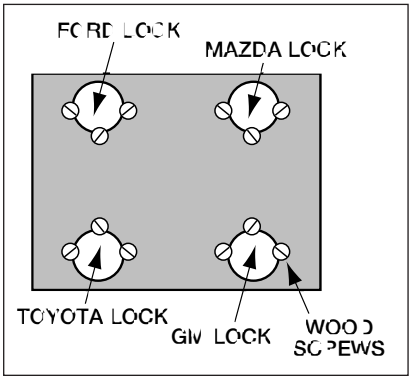

Illustration 42.

To keep the screws from scratching the caps that they hold down, I coated each screw with the plastic coating that you can use to dip tool handles in.

Now all you have to do is slide your partially assembled cylinder with the face cap on it, face down between the screws. The screws act as a vise to hold the face cap in place while you use a screwdriver or other tool to bend the tabs over.

With the terry cloth-covered base and the plastic coated screws, you are virtually guaranteed to be able to replace face caps without scratching or marring them.

As you can see from the diagram, you can accommodate various automotive locks on the same board. I hope you like this method as well as I do.

Bobby Brown
Florida

Lighted Follower Update

Thanks for printing the tip I sent you regarding the use of a Mag Silhouette flashlight with a 1/2" copper union and an aluminum nipple as a lighted follower. Here's an improvement on that idea.

Obtain a 1/2" O.D. copper nipple about 1-3/4" long. Insert it in the union that is on the end of the flashlight. You now have an adapter that will work well with HPC's follower set (HPC part #SUT-14). The .395" follower will slide inside of the nipple and the .546" follower will slide over the nipple giving you the advantage of a lighted follower.

Bob Davidson
South Dakota

Converting A Kent Moore Interrogator

For those of you who own the Kent-Moore Vats Interrogator (single sided only), you'll be pleased to know there is an economical and easy way to convert your Kent Moore to a dual reader for under ten dollars and less then twenty minutes of your valuable time. *Photograph 1*, shows a K/M converted with a double sided GM key inserted for interrogation.

Photograph 1.

Simply purchase ALL LOCK'S LT7006 Double Vats Adapter from your favorite distributor for under ten bucks - which is less then a third of the cost of a Kent Moore adapter kit - and follow the easy directions below.

To install the All Lock LT7006 on a Kent Moore interrogator, remove the four screws from the face of the unit. Remove the clamp and the two screws on the back side of the face plate that holds the GM plug. Use a small soldering iron to remove the two leads from the circuit board and the remove the GM plug.

Now install the All Lock LT7006 adapter. The LT7006 will fit slightly off center since the GM plug's ears are slightly off-set where the LT7006 is not. However, one screw will secure the All Lock adapter and hold it in place. If you want to use both screws, you'll have to carefully enlarge the holes in the face plate slightly.

Now reassemble the unit, including re-soldering the appropriate leads, etc. and your Kent-Moore interrogator will now read double sided Vats as well as single sided.

Norman E. Most
Texas

[Editor's Note: Russell Alsbrook, National Sales Manager for ALL LOCK tells me that Norman's tip is a legitimate tip and it will work as Norman states. For those worried about voiding the warranty on your Kent-Moore by making this conversion, the chances are if you have the older version, the warranty has already expired anyway. My thanks to Norman and Russell.]

A Bright Idea For Wafer Reading

I found that I needed a good light to read the wafers in a Ford Ten Cut door lock, especially the ones that are difficult to take off of the door. I have tried a variety of lights to help read the wafers, but none seemed to do the trick for me.

While in a gun store, I found a light that is put out by Browning that is used to look down the barrels of guns. It has an "L" shaped lexan light that I filed down to a tip that fits straight into the top of the keyway of Ford door locks. It even holds the shutter open, and it lights up the whole keyway.

If you don't want to spend twenty bucks for the complete light, just buy the bulb for about $2.00 and use the rubber tip of a spark plug wire and fit the other end of the rubber over your own MAG light.

This simple item helps me to quickly make keys for these locks by sight reading the wafers. As far as I'm concerned, it sure beats trying to remove the lock from the door and decode it.

Lance D. Ross,
Texas

[Editor's Note: For those that might find wafer reading to difficult, H. E. Mitchell Co. - 1/800/626/5625 - has a product called E-Z-Reader which allows you to read the wafers in a Ford 10-cut with the use of a simple to use tool. I have one and have found it to be invaluable on occasion. H. E. Mitchell also has E-Z Readers for other wafer locks as well. Give 'em a call!]

Automatic Staking Tool

I've read several tips in your column that mentioned Automatic Center Punches and what versatile tools they are. Here's a tip for converting an Automatic Center Punch to a staking tool for GM lock cylinders and other cylinders that have retainers that require staking.

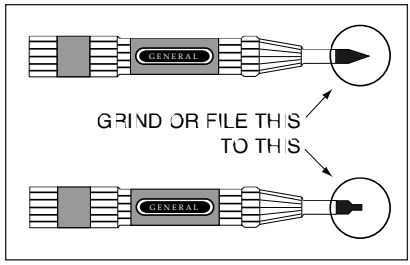

Illustration 43.

As shown in *Illustration 43*, this Automatic Center Punch comes with a pointed tip for marking drill sites, etc. If, as shown in the illustration, you file or grind the tip down as shown, the punch can now be used to stake GM spring caps and side bars.

The tension of the punch is adjustable from light to heavy, which makes it ideal for a variety of staking requirements. Also, since you can use the punch with one hand, the other hand is free to hold the cylinder or retainer cap, etc.

As far as I'm concerned, if you do any amount of GM work at all, this modified Automatic Center Punch is a "must have" tool.

Rick Rogers,
Colorado

Plug Followers Galore

I'm sure every locksmith needs plug followers and often does not have enough of them. The most common sized follower is .500". Here's an economical way to get more than enough followers for your shop and service vehicles..

Go to a builders supply house or a plumbing supply house and buy a length of 1/2" copper tubing. Cut it up into three, four or five inch lengths, smooth off the burrs and you have several very good and inexpensive followers.

You can also cut or file the ends for different configurations of plugs.

NOTES

Magnetic Padlock Opening

This Technitip will allow you to open the "conch" magnetic padlock very easily if you have lost or misplaced the bar shape key which fits in a recessed groove along the side of the lock.

Hold the lock with the black plastic band around one side of the shackle in your left hand, with the plastic band to the left. Tilt the lock to the right, black band end of the shackle facing up. Insert your right index finger into the shackle and give it a quick jerk outward. The shackle should pop open with two or three quick rapid jerks.

Milton L. Chanove Jr.
Horton, MO

Master #40 Padlock Removal

A customer brought me a Master #40 padlock (with a rotating shackle) that could not be unlocked with the original key. The key only started to turn the shackle and would bind up. Apparently, the cam on the rear of the plug had come loose and jammed the mechanism. Since the lock was attached to a specialized hasp, the customer wanted it removed.

To solve the problem, I completely drilled out the locks plug. Then I pushed the remainder of the cylinder to the left of the opening in the lock case *(see Illustration 44)*.

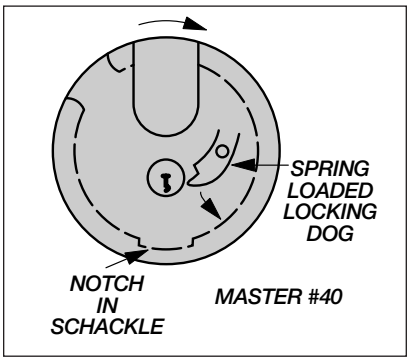

Illustration 44.

Looking to the right of the hole I just drilled, I could see the notched end of the locking dog. With a small screwdriver I pushed down on the notch which released the shackle. Then I used a small screwdriver with a 90-degree bend in it to rotate the shackle clockwise until it opened.

The opening was fairly quick and easy. The only thing I had to watch was that the locking dog, which is spring loaded, did not re-engage before I could rotate the shackle to the open position.

James Troeller
California

Padlock Cylinder Removal

I service a fair number of padlocks each year and have constantly searched for an easier way to open locks like the American 700 series or the Master rekeyables.

Not long ago I was talking to a friend of mine, who happens to be a machinist, and was telling him that if I could just find an easier way to remove the hardened retainer on the bottom of these locks, I thought I could originate lost keys more quickly and without doing any major damage to the padlock itself *(see Illustration 45)*.

After looking at one of the padlocks, he suggested that I try drilling the retainer out with a #4 Carbide Center Bit. These bits have a 1/8" pilot bit and a 60° rake that just about equals the dimensions of the retainers.

Drill out the bottom diameter (about 5/16") of the retainer, pry off the hardened retainer plate, drop the cylinder and use a screw driver to open the lock.

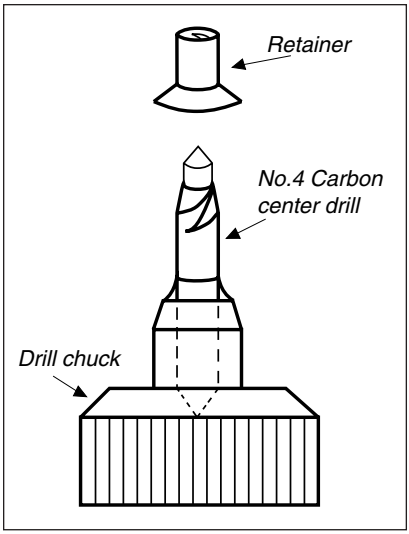

Illustration 45.

After shim picking the cylinder you can originate a key to match the cylinders bitting. Or, you can recombinate the cylinder.

Carbide Center Bits are available from machine tool supply houses or, perhaps, you can get one from you local machine shop.

Thomas P. Pirkle
Georgia

Master Lock Master Key

Here's a way to determine the master key for a series of #3 Master padlocks that have been master keyed when you only have one lock and one change key to that series. First, duplicate the customer's change key and set their key to the side. That way you will not inadvertently destroy the customer's key.

If the customer's key has a code number, that number should be used to generate the key(s) that you'll need to work with. If there is no code number available, decode your duplicate key and rotate the bitting. In this case we will assume it's 3-4-3-5.

Either with a code machine or with space and depth keys, cut your first key to 0-4-3-5. Try the key and see if it will turn the plug. If not, cut the number one space one depth deeper and try the key. Repeat this process on the first space until the key turns the plug. You know it will turn when you cut the first space to a three depth, but that does not necessarily indicate you have the master bitting in that position. You have to try a four and a five. If only a three depth, in the first position, turned the plug then a three depth would be the master bitting in the first space. Just for fun, let's make the master bitting a one depth.

Now cut a second key to the following code: 1-0-3-5. Repeat the same process in the second space to determine the master bitting for that space. Let's assume you find the master bitting to be a five. Cut your third key to 1-5-0-5. Repeat the process in the third space. Here we'll call the master bitting a one cut. You cut your fourth and final key to 1-5-1-0. Repeat the process for the fourth space. Let's say the master bitting turns out to be a five (which is the same as the change key). That should give you a master key with the following bitting: 1-5-1-5. That bitting should give you the master key common to that particular series of master keyed, #3 Master padlocks.

Just remember that you have to progression each space separately, one depth at a time. And, just to make sure you have the proper bitting, you have to exceed the change key depth whenever necessary to determine the proper master bitting for that chamber or spacing.

R. W. Staples, CML.
Washington

Finding Master Padlock Combo

The Master Combination Padlock (Model 1520) has a user changeable combination which often results in lost combos. When a customer recently brought one into me, I

found a relatively quick and easy way to recover the combination.

I tied a piece of string (abut 24" long) to the shackle and tied the other end to the work bench. By pulling fairly hard on the lock with one hand, I manipulated the four levers around one at a time until I felt a wheel lock up solid.

For example: the number two wheel locked up at "1." I left it in that position and manipulated the other three wheels until the number one wheel locked up at "3." By continuing that process, the fourth wheel locked up at "1" and the number three wheel locked on "2."

The combination was: 3-1-2-1. It took me about 10 minutes to do this the first time. The only trick I needed to learn was applying just enough pressure on the string to cause the wheels to lock up on the number, but not so much pressure that the wheels locked up on every number.

Donald Shiles
Maryland

Making A First Key To An American Padlock

Frustration levels can sometimes run high on what, at first glance, appear to be the simplest of jobs.

A customer with a dozen or so keyed alike American Padlocks on a job-site called and needed a key cut to operate these locks. Impressioning and picking did not work, so I decided to take a cylinder out of one of the locks by drilling the retainer and dropping the cylinder.

Once I had the cylinder in my hand, I knew I was only a shim away from decoding the cylinder and making the keys the customer wanted. Unfortunately, through lack of use, serrated pins and very close tolerances, the cylinder refused to reveal its bitting.Using up some valuable time and while starting a fresh shim, I realized that all I needed was the length of the bottom pins and I could make a key. But how to get at the bottom pins? Simple! Get rid of the bible!

I clamped the cylinder in my vise (no need to worry about distorting the cylinder since you're going to ruin it anyway,) and used my Dremel Tool to cut the bible off as shown in *Illustration 46*. Just cut the housing at the base of the bible at a 45-degree angle. Cut gently and not too deeply. You just want to separate the bible from the rest of the housing. Turn the housing around and do the same to the other side.

You should now be able to lift the bible off the housing. Before you do, gently tap the top of the bible to make sure all the bottom pins are down in the plug. Now, gently lift

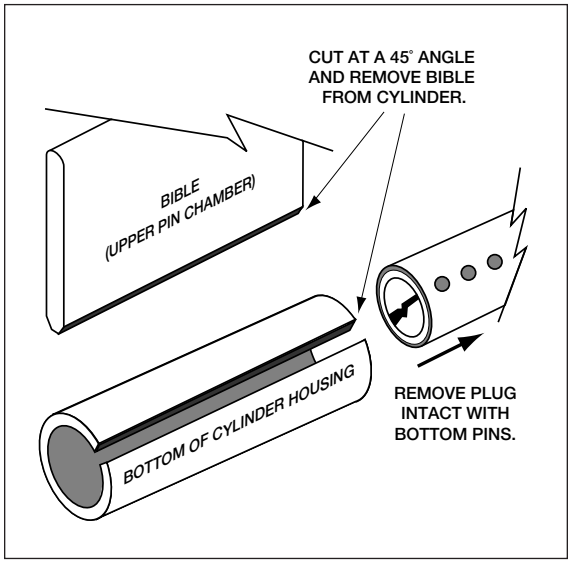

Illustration 46.

the bible and remove any springs or top pins from the plug that you can see.

Carefully remove the plug and very slowly insert an uncut blank in the plug. This will eject any top pins left in the plug and raise the bottom pins to where you can sight read the cuts.

There could be complications if the locks are also master keyed, but that's for another tip. In this instance, Murphy left, my customer was happy and I could get on with my day!

Jeff Rosen,
Colorado

Opening and Decoding a Master #175

A Master #175 Resettable combination Padlock was recently brought into my shop with the combination lost. I had a tool that I had ordered that was supposedly made to open this type of padlock quickly. No such luck.

After fooling with the lock for more time then I should have, I decided to find out what makes this particular lock work. I took a brand new 175 off the shelf and cut it in half so I could see the mechanism and figure out how to get into the one the customer brought me. I know that sounds like an expensive way to solve a customers problem, especially on a padlock, but for my own satisfaction I wanted to see if I could figure out how to open this lock and then decode the same, etc.

What I came up with was a modified Weiser shim pick that I bent around a 1/2" plug follower so that it looked somewhat like a candy cane. the "hook" on the cane was about 3/4" in diameter *(see Illustration 47).*

As also shown in *Illustration 47,* insert the curved end of the tool into the gap above the first wheel (The Master logo will be on your left) so that the shim follows the diameter of the wheel. Push in on the shackle of the lock and then push the shim in, all the way, until it stops on its shoulder.

Release the shackle and the lock is open. Now that the lock is open, the reset keyway is also open, which is possible to reset the combination once you have determined the existing combo.

To determine the existing combination, the first step is to get the change key to turn. Do this by pushing in hard on the key and turning it while randomly rotating all the wheels with your thumb until the key turns. This should only take a few seconds and seldom ever more then a minute or two.

Next, leave the key turned and set all the wheels to zero. Then remove the key and get out a pencil and paper.

To actually decode the combination, turn the first wheel to "1," insert the key and see if the key will turn. If the key will turn, take it out

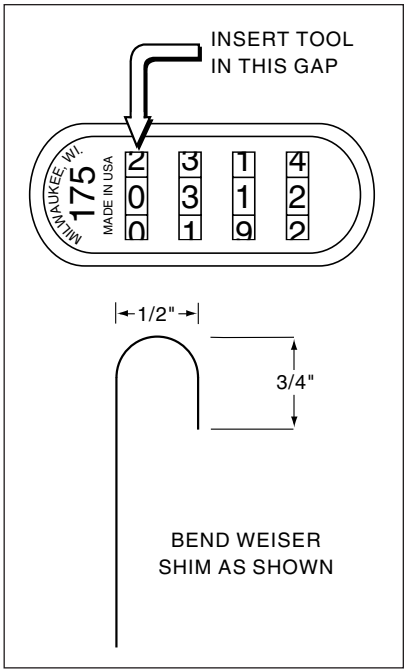

Illustration 47.

and turn the wheel to "2," insert the key and see if it will turn, repeat the procedure until the key does turn. What's going to happen is the key will turn on three different numbers. Two of those numbers will be sequential, 1-2, 5-6, 8-9, etc. and one will not be sequential. For instance, on your number one wheel you get a reading of 3-4 and then 7. Seven is the number for the first wheel. Repeat this sequence for the next three wheels until you have determined the existing combo for the lock.

Remember to take the key out after each step and to leave the wheels that you are not working set on "O." If you don't take the key out each time, you'll risk resetting the combo before your ready to and will have to repeat the whole exercise.

After testing the lock for the combination you have decoded, you are ready to reset it to a different combo, or return it to the customer.

Shane Maloney, CMS
Canada

[Editor's note: Over the last couple of years, I have printed several tips on opening and decoding the Master 175. Shane's tip is printed for the same reason the others were: to give readers another means of accomplishing a given task. However, from a strictly personal point of view, when it comes to servicing lockouts on padlocks, I'm quick - with certain exceptions - to reach for the "pinch pick" (bolt cutter) unless the customer understands that the service I perform could easily cost more then a new lock. Of course, there have been instances where I, like Shane, just had to prove to myself that I could "do it to it". Thanks for a good tip, Shane!]

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Schlage Function Change

One of my customers had a problem with employees leaving the back door of his warehouse unlocked and asked me to do something that would keep the door locked all the time.

The lock was a Schlage L9453 Mortise Lock, with an entry function and a thumbturn on the inside. I converted this lock to a function that serves as a storeroom lock with the added feature of a deadbolt!

I did this by removing the thumbturn that was supplied with the lock and installing a standard 1-1/8" mortise style thumbturn. To install the mortise style thumbturn, I had to cut a 1-1/4" hole in the inside escutcheon (The lockcase is already designed to accept a mortise cylinder) and installed an American Lock #9210 mortise thumbturn.

With the original thumbturn removed (I put one of my business stickers over the hole) and the mortise thumbturn installed, the outside lever is prevented from being unlocked.

Now this door is locked all the time (unlocked on the inside to comply with Life Safety Codes) and at night it can be deadbolted just by turning the mortise thumbturn.

One other thing. If the door is not already equipped with one, this is a good opportunity to sell the customer a door closer to make the door self-closing and self-locking!

Ken Williams
California

Simple Mortise Repair

I was called to service the locks on a solid glass store front door. The manager had called another locksmith who had told her that the set screw that held the cylinder in place was broken and in order to service the lock, the door would have to be taken down and would cost the store about $200 to repair.

The lock on this type of door is mounted in a small block of steel cladding that is mounted on the lower left corner of the door and is called a "Patch" by the manufacturer *(see Illustration 48)*. After examining the door, I determined that the door would not have to be taken down and that the lock could be removed for servicing by following the procedures:

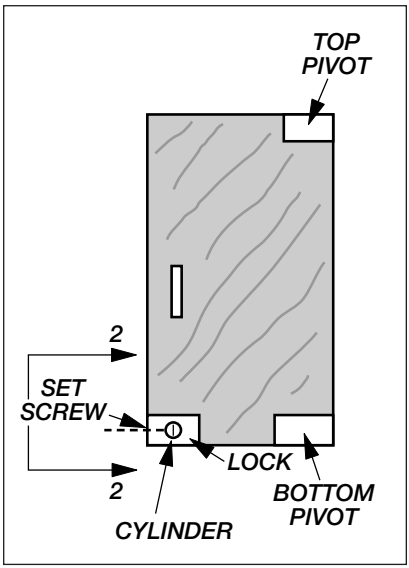

Illustration 48.

First loosen the set screws that are accessible through two holes in the end (door edge) of the face plate or cladding. Then, unscrew the cylinders as you would any standard mortise type cylinder.

The next step is to release the cladding from the door by pushing

in on the two spring loaded pins that are located close to the set screw holes. When the pins are depressed, the stainless steel cladding can be removed by pulling the cladding from the end of the door *(see Illustration 49)*.

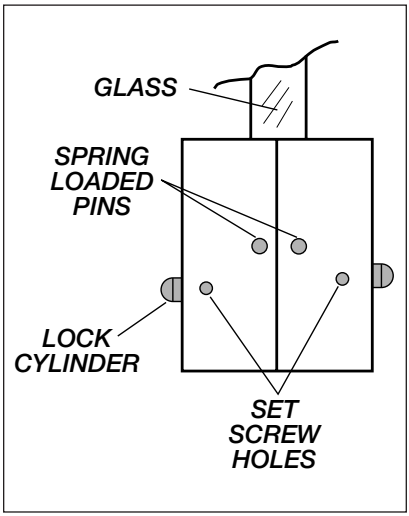

Illustration 49.

You have now exposed the four screws (two on each side) that hold the two halves of the patch to the door and the two screws on each side that hold the lock to the patch plates. By removing the screws holding the lock to the patch on the side which had the broken set screw, you can then access the set screw with (in this case) a pair of needle nose vise grip pliers and remove it.

Replace the broken screw with a new one. Reinstall the patch back on the glass (but leave it loose). Then using a screw driver throw the lockbolt into the dust proof strike to make sure it is properly aligned. This often takes a fair amount of adjustment. Next tighten the patch and lock screws, put the cladding back on, put the cylinders back in place, replace the retaining screws, collect your money and go on to the next job.

It takes about half an hour to do this service and there is no heavy lifting involved.

Billy Jackson,
Texas

Bit Key Removal

The other day an elderly lady called me to get her key unstuck. When I got there, I found a bit key bound up in an old mortise lock.

The lady had used the wrong key which, although it unlocked the door, the bolt was not completely withdrawn. When my customer noticed this, she pushed the bolt back into the lock and effectively trapped the key.

It was the only copy of that key that she had and since it fit other locks in the house, I could not simply break it off and repair the lock. To salvage the key without damaging the lock during this late night call, I drilled a 1/8" hole into the center of the bolt, screwed in a tap and pulled out on the bolt.

That freed the bind on the key which I removed unharmed from the lock, and checked the operation of the lock with the proper key.

Russ McGurrin
Ohio

Mortise Lock Opening Alternative

When servicing a lockout on a full mortise lock when the deadbolt is not thrown, try removing the outside knob and see if the spindle and inside knob can be pushed inside the door. If it can, you can fashion a tool from a 3/16" carriage bolt by squaring off the end with a file or grinder, and bending the bolt at a right angle about two inches in from the end.

Insert the tool in the spindle hole and wedge the inner hub to retract the latch. This works well when

the spindle can be removed and if the lock has a particularly hard cylinder to pick.

Jack Tom
New Jersey

[Editor's Note: Here's another application where I think the Snake Pick from Mark Bates and Associates (1-800-555-4471) is made -to-order. The Snake Pick is capable of manipulating either the deadbolt or the latchbolt of mortise locks that do not have a block at the end of the keyway. Thanks for the tip, Jack!]

High Security Mortise Cylinder Opening

Recently, I was called to open a business for a customer who had lost his keys. Upon my arrival I noticed that it was a high security mortise cylinder with a hardened collar. The lock was on a glass store front door and there were no other access points to the building. Since the cylinder was virtually pick proof my next question was how to gain entry.

I loaded my Milwaukee cordless drill with a 1/sS high speed drill bit and drilled approximately 3/16t from the right hand edge of the cylinder. Use a line passing through the center of the cylinder as your guide *(see Illustration 50)*. This enabled me to drill through the set screw which holds the lock in place without damaging the threads of the Adams Rite lock as well as the threads on the mortise cylinder. Then I easily unscrewed the cylinder and unlocked the door. I then installed a new mortise cylinder, even though the original cylinder could still have been used if it were placed on the inside of the door.

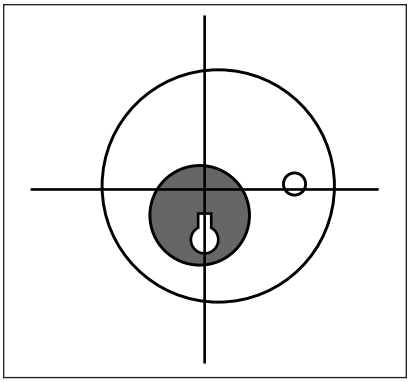

Illustration 50.

If the door had opened on the left instead of the right, I would have drilled 3/16~ from the left edge of the cylinder. These measurements may vary from cylinder brand to cylinder brand.

Jeffrey Nunberg
Miami, FL

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Vault Opening Made Easy

One of my customers accidentally shut the door to a vault without anyone knowing the combination to the lock. The dial and lock had deteriorated through disuse and that precluded manipulation.

This door was a Diebold #177-24, 3-wheel combination lock with hardplate protecting the lock case from drilling.

Having previously had the opportunity to observe one of these doors from the inside, I knew that there was an emergency handle to allow exit from the inside of the vault. So, I measured 10" up from the dial center and started a 3/8" hole.

After getting my hole started, I angled my drill to a downward 45° angle and drilled through door, and the back plate. Then using a 16"x3/16" rod I made, I reached through the lease handle and pushed *(see Illustration 51).*

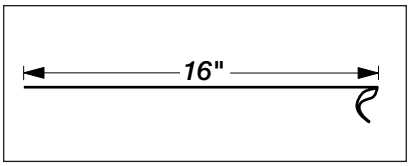

Illustration 51.

When I felt the emergency handle push inward (which releases the lock cam from the lock bolt) I turned the outside handle to open the vault door.

Keep in mind that there is hardplate in these doors, so you may have to adjust the angle of your drill attack.

Rick Sullivan
Texas

Restricted Keyway Lock Replacement

Have you ever been called to a lockout where picking the lock just turned out to be impossible? This recently happened to me on a service call to a post office. Normally, in this situation, I would reach for my drill and drill the plug at the shear line, install a new plug or lock and be done with it.

The reason that I did not follow that course of action in this case was because the keyway was a restricted keyway and if I had destroyed the plug, it would have taken six to eight weeks to get a new one. My customer didn't want to wait that long, and neither did I.

Fortunately, I found a way to save the restricted plug, get the customer through the door and, get the restricted lock back in service almost immediately. All without destroying anything but the mortise cylinder.

I inserted an uncut keyblank in the keyway and, as shown in *Illustration 52*, I drilled a 5/32" hole just above the plug and shearline.

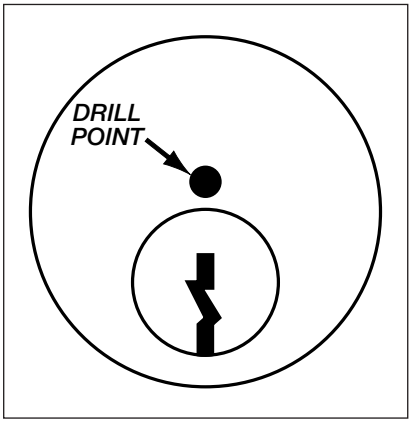

Illustration 52.

After carefully drilling through each of the six top pin chambers, I removed the uncut blank and used a curved pick to push the bottom pins down past the shearline, which allowed me to turn the plug and unlock the door.

Then I simply replaced the drilled mortise cylinder shell with another shell from the same manufacturer (the spacings are the same on both the restricted and non-restricted plugs), rekeyed the lock to a new combination and had a very happy customer.

Mike Ainsworth
California

Opening The Ultra Club Without Keys

Here's how to open The Ultra Club when the key has been lost. The Ultra Club is the one with the round key profile with four rows of pins. Up until now, many attempts to pick this lock have come up in vain and the only recourse was to cut the lock off the steering wheel. I have found a way to remove it without cutting.

Refer to *Illustration 54*, and drill a 1/4" hole, 3/4" in from the edge of the housing and in line with the red dot on the face of the lock. After penetrating the first layer of metal you will find the locking bolt. Use a punch and pry the bolt back allowing the removal of the Ultra Club.

If the Ultra Club is mounted upside down, you can drill from the back and do the same thing.

James Amundson, CJS
California

Tubular Lock Bypassing

Tubular locks like Ace and Greenwald often cannot be opened by picking because of a malfunction in the lock. When I encounter one of these locks, here is how I open it.

I use my die grinder to grind off the face of the lock. Then use my shop vac to clean out the debris from the springs and pins that are in the cylinder. Then I use an uncut tubular key or a pair of needle nose pliers to turn the plug.

If you do not have a proper blank, you can use a Dremel tool to cut a slot in the nose of the lock into which you can insert a screwdriver to turn the plug. I find that a little brake drum cleaner or WD-40 sprayed into the lock helps this to work a little better.

John M. George, CML
California

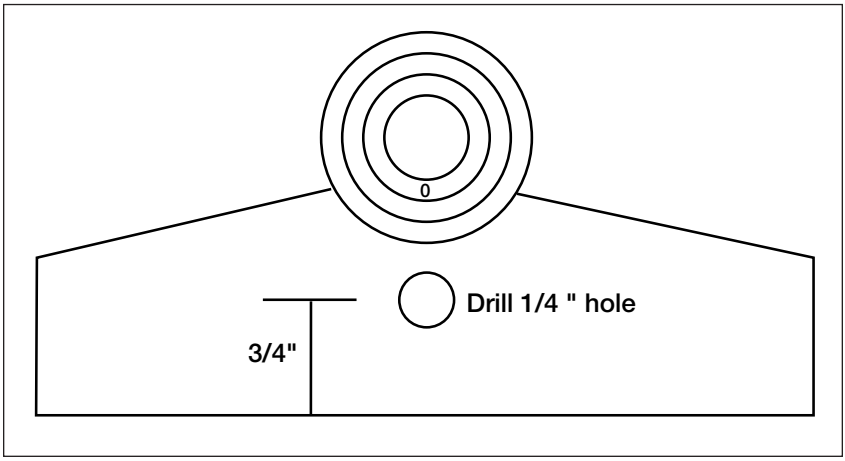

Illustration 54.

Broken Key Lockout

My tip for broken keys is to drill a l/32" or l/ 16" hole in the bottom of the key itself about 1/4 of an inch in to allow a spiral key extractor to enter.

On thicker keys, such as Corbin, Russwin, and Schlage, there is usually plenty of room to drill a small hole with a cordless drill. Even if you do not go straight, you will be able to insert a spiral key extractor.

Bind it to one side while pulling and the key will come out. Drill in the fattest part of the key.

Kevin Wilson
Lawrenceville, GA

Desk Lockout

One of the most common desk lockouts I run into is on General fireproof desks. The model which I am referring to is black metal with a distinctive woodgrained top. These desks use a five disc National cam lock. The lock operates a linkage bar that runs alongside the top drawer and raises the rod in the rear of the drawers. The rear rod locks each drawer as it is lifted. When the lock is unlocked, gravity drops the rear rod and the drawers are unlocked.

Many times the owner will overfill the drawers or put an oversize object inside a drawer. If it comes in contact with the locking mechanism, a lock-out can occur. On the desk bottom at the rear and directly under the locking rod, there are two holes about 1/8" in diameter. Take a piece of wire and bend an "L" on the end. One-quarter inch is sufficient. Insert the wire up into the hole until contacting the locking bar. Then pull the locking bar down.

There is also a gap between the desk top and the metal at the rear of the knee well. A piece of wire bent in the same fashion can be inserted and pushed down on top of the side linkage letting the rear locking bar drop. Both of these methods can be used to open the desk drawers instead of picking the locks.

Larry Wright
Gaffney, SC

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Motorcycle Key Generation

This month, I am beginning my third year as a locksmith and wanted you to know how much I appreciate your magazine.

I don't see many articles on motorcycles so I am forwarding this to you in the hopes that it may help others who may get a call to service a 1991 Suzuki Fatana, Model 600. The code series is 6001 to 7000 and uses a SUZ12 keyblank and HPC code card MC71.

There are a total of seven cuts and four depths. The 1 depth is a no-cut. The seat lock and the gas cap lock do not have codes on them and are held in the cylinders by a spring loaded retainer wafer at the rear of the plug. Use a diamond or hook pick to depress the wafer and remove the plug.

First, remove the seat lock and make your key to fit spaces 2, 3, and 4. Second, remove the gas cap lock and make the key fit spaces 5, 6, and 7. The only cut left is the 1 cut which can be easily progressioned.

William Allgood
South Carolina

Dor-O-Matic Fix

Here's an easy way to fix a concealed Dor-O-Matic slide that won't let the lock cylinder turn the full 360°. Just find the small flat area on the side of the geared lug that fits over the lock cylinder tailpiece.

Install this lug with the flat side upward and you can turn the cylinder that extra degree or two to lock or unlock it. The flat area is difficult to see but, if you look closely, you'll find it.

It sure beats trying to adjust the locking rods .... and it's a lot quicker.

Ross Henderson
South Carolina

Quick Kwikset Fix

When the tailpiece on a Kwikset deadbolt breaks and locks your customer out of their house, you do not always have to destroy the plug or cylinder to get the door open.

I carry some 1/16" thick music wire (you can get it at your local hobby store) on my truck and when I'm confronted with this type of lockout, I make up a turning tool like the one in *Illustration 55.*

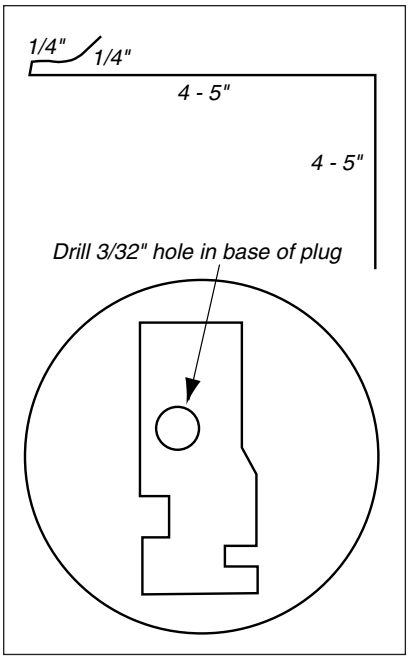


Illustration 55.

Then, using a shorter piece of the same wire, I lift the pins to the top of the plug and carefully drill a 3/32" hole through the back of the plug that allows me to access the broken tailpiece. Then, I push my turning tool through the hole in the

back of the plug, and into the broken tailpiece. Now all I have to do is shake the door while turning on the "handle" of my tool, the lockbolt will throw and the door is unlocked!

Afterwards, I disassemble the lock, clean out the plug and cylinder, patch the hole in the plug with Liquid Steel, replace the tailpiece and put the lock back on the door.

Ken Shaw
Montana

Illinois Plug Removal

Here is a service technique that I have found to be successful when servicing Illinois Duo and standard double sided disc locks.

When faced with a lock out on these locks, you will sometimes find the code stamped on the face of the lock. If the code is visible, simply cut the proper key and be done with it. However, the code is often found on the rear of the plug and not visible without removing the plug from the cylinder.

These cylinders are generally held in by an internal retaining ring that is not accessible unless you have a key. This is where my trick comes in handy.

Per *Illustration 56*, drill and tap a hole where indicated to accept a #6-32 screw. Do not drill your hole more than 3/16" deep. Insert the screw and using an automotive lock extractor, pull the plug out of the cylinder housing. Once the plug is removed, the bolt can be probed back to the open position.

At this point, you have the option of replacing the lock or generating a key for it after obtaining the code from the rear of the plug. If you generate a key, the next step is repairing the lock.

The repair is usually only a matter of snapping the retaining ring back to the plug and "popping" the plug back in the cylinder. Before replacing the plug make sure to "de-burr" it and the cylinder, if necessary. Finish the repair by cutting off the screw and grinding or sanding it flush.

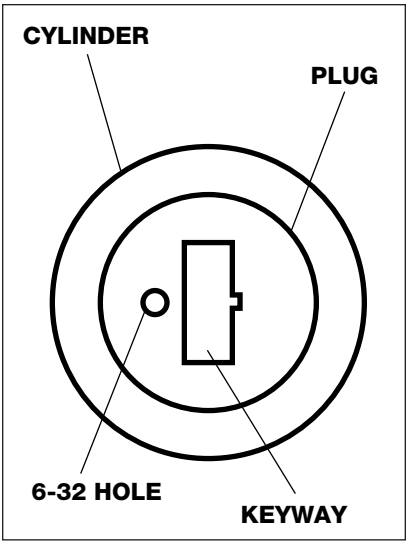


Illustration 56.

John Carty, CJS
E-Mail

Editor's Note: If you're going to use force, better plan on replacing the plug. Even if it looks repairable, why take chances?

Laminated Padlock Repair

We frequently have customers bring in either #3 or #7 Master padlocks that they want keyed alike, but don't want to wait for us to order them or spend the money for a mate to one of the locks that they already have.

To key one of these locks to their sample key requires cutting or grinding off the rivets on the bottom of the lock case, pulling the segments apart, removing the cylinder and rekeying it. Then, of course, you reverse the process when reassembling the padlock.

Unfortunately, the rivets tend to be a little too short to peen over on the bottom of the lock case

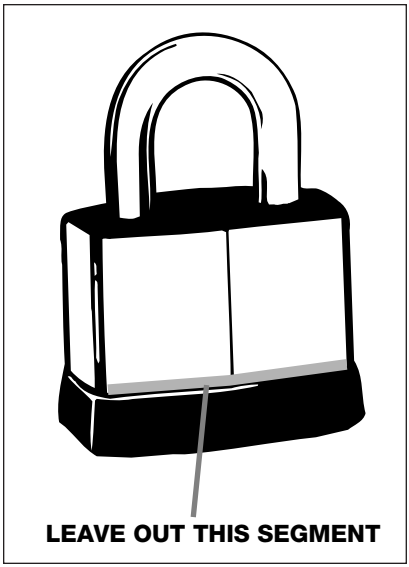


Illustration 57.

sufficiently to hold the segments together.

To solve the problem, we have found that since the cylinder is somewhat loose in the case, there is enough room to leave out one segment and still have the lock function properly after it has been reassembled. We leave out the segment immediately above the rubber bumper with the name stamped on it *(see Illustration 57).*

George Lazich
E-Mail

Schlage IC Core Rekeying

Here are a few useful hints for locksmiths that are called to repin Schalge removable cores.

When removing the cylinder cap on Schlage removable core cylinders, a Weiser Cylinder Cap Tool with the round notches works well. However, you need to cover the hole in the tool with your finger to prevent the retaining pin from flying away should the tool get a little off center.

When rekeying these cylinders, it is good to develop the habit of holding your finger over the control pin as you dump pins from the plug. Otherwise you may spend unwanted time searching for this specialized pin among your scrap brass or the floor of your van.

And, in a pinch, you can make a control key for these cylinders from a standard 6-pin blank by filing the shoulder back to correspond to a 7-pin blank, Then duplicate the customers key, and in the seventh space cut the key to a #6 depth. Run the cut off the tip of the blank so the tip is perfectly flat.

Lyn Behm
Utah

Key Extraction

Removing broken keys from any type of lock can be a frustrating experience. Especially on some of the foreign car locks that we have to work on. Here is a method that I first used to remove a broken key from a locked door so the customer could use their spare key to open it. Since then, I have used it successfully to remove broken keys from several imported automobiles.

All you need to make this tip work for you is a battery powered drill motor, a spiral extractor and a steady hand. If you don't have a steady hand, you can make a "drill guide" like the one shown in *Illustration 58* from the proper key blank.

Once you have determined that you can't remove the key by conventional methods, chuck a 1/16" or a 3/64" bit into your drill motor. Either using your home-made drill guide or drilling free-hand, drill a small, shallow hole in the widest part of the broken key that is trapped in the lock.

Then, thread your spiral key extractor in the hole you have drilled and use the extractor the same way you might use an Easy-Out except you will use pulling pressure rather then turning pressure to remove the broken part

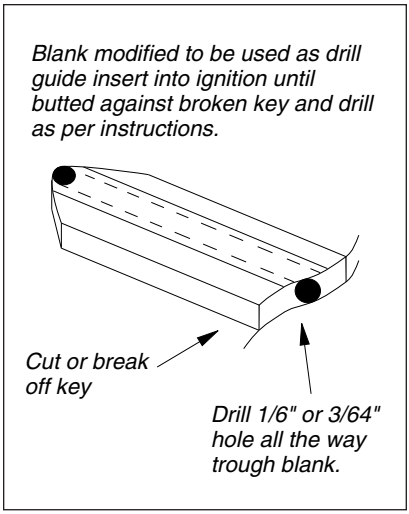

Blank modified to be used as drill guide insert into ignition until butted against broken key and drill as per instructions.
Cut or break off key
Drill 1/6" or 3/64" hole all the way trough blank.

Illustration 58.

of the key. If wafers or pins prevent you from pulling the broken piece out of the keyway, use a curved pick or shim to lift each wafer or pin out of the way.

As far as the drill guide that I mentioned, don't worry about it not holding up because it's brass. You're only going to use it once, and then only to drill a hole deep enough into the broken key piece to allow your extractor to get a good, firm "bite". Just be careful to drill the broken portion of the key and nothing else!

William H. Dement
South Dakota

Editor's Note: I tried this procedure on a Kwikset cylinder and on a Nissan X7 keyway cylinder. In both instances, I was able to remove the broken key with ease. Of course, on the Kwikset there was plenty of room to work. On the X7 things were a little tighter. And, both locks were not mounted, but on my work-bench which would probably make it easier to work on them. Still, I think that William's tip has a great deal of merit, but like he said: "Be careful." Read on for another way of removing a broken key from foreign cars.

Broken Key Removal

Most locksmiths have encountered a broken key inside of a lock from time to time and have also found that removing the broken piece through the front of the lock is usually successful.

Unfortunately, I'm sure locksmiths have, like I have, found some import ignition locks that were nearly impossible to remove a broken key from through the front of the keyway.

In order to service these locks, I have found it necessary to remove them from the column to gain access to the rear of the lock. Once you had access to the "tip" of the key, you could push it out through the keyway. However, many of the newer ignition locks are completely encased in metal with no exposed access to the keyway. Here's how I correct this problem.

After removing the ignition housing from the column, I drill a 1/16" hole through the back of the lock, and in line with the center of the keyway, just to what I perceive to be the "break through" point. Then using a straight, stiff wire, I push it all the way through the hole to the keyway and push the broken piece of key out of the plug.

To help in removing the broken tip of the key, I use the other part of the key and insert it in as far as it will go to raise the wafers out of the way which eases the travel of the broken piece. Then the key can be duplicated or the lock serviced as needed.

J. Drew Van Deventer, CPL
Colorado

Editor's Note: In his tip, Drew does not indicate whether he removed the cylinder from the saddle or housing that holds it to the column before drilling the hole in the rear of the cylinder. Many of the newer import ignitions like the Mitsubishi (X160 keyway), Mazda

(X222) or Nissan Maxima (X123) have all sorts of electrical connections that come out of the back of the housing that would preclude drilling in the manner discussed. If, on the other hand, you had the entire lock cylinder removed from the saddle it would be possible to drill a small hole through the back of many of these ignitions to get to the broken key. In any event, since working on a steering column is serious work and involves the safety of your customer, I would proceed with extreme caution and avoid any "rigging", unorthodox repairs or temporary fixes.

Narrow Stile Lock Opening

Before I became a locksmith, I spent 25 years as a glazier and installed a whole lot of narrow-stile aluminum doors on store fronts. I'm sure that because of my previous experience, I make look at some things with just a little different perspective than many locksmiths might.

Long before I became a locksmith or knew anything about picking, impressioning or drilling lock cylinders, I successfully used the following method to gain entry to customers businesses. One of the benefits of this method is: it will bypass cylinder guards and "undrillable" high-security mortise cylinders. And, it will do it without damaging the cylinder or the lock!

The first step is to remove the Holding Stop (One of four pieces that holds the glass in the frame) from the rail (or door stile) that is positioned immediately behind the lock. The holding stop is about a 1/4" thick and about 1/2" wide. This is easily accomplished with a thin putty knife and small hammer. Just lightly tap the putty knife between the holding stop and door stile, working it downward until the holding stop unsnaps from the stile *(see Illustration 59).*

Now, drill a small hole through the edge of the stile behind the lock. You want to make sure that your hole is just above the bottom of the cylinder and safely away from the edge of the glass! At this point all you have to do is take any small, stiff tool and push forward and down on the roller on the MS lock.

Voila! The lock is open. No ruined locks, distorted or broken set screws, no ruined mortise cylinders and best of all - no repairs are required on the door. Just snap the glass holding stop back in place and you're ready to rekey, replace or make a key for the cylinder.

Billy Jackson
Texas

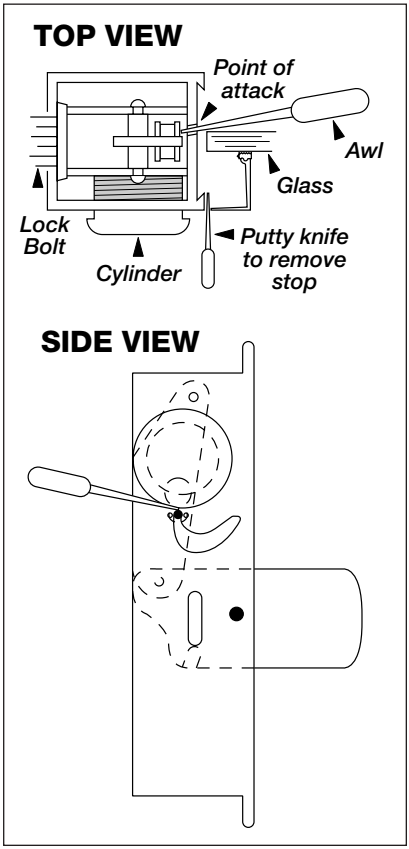


Illustration 59.

Editor's note: Over the years, I have been shown a number of ways to "by-pass" MS style lock cylinders. Billy's method is one that I didn't know about and would like to add it to my arsenal of entry methods. Especially since there is no apparent damage to the lock, the lock cylinder or the door itself. However, I want to caution anyone who tries this method to be extremely careful of the glass and the proximity to the glass where you are drilling. Mark Bates of Mark Bates Associates, (606) 858-0811, sells a tool called a "Snake Pick" which manipulates the roller through the keyway. The Snake Pick will open an MS style lock without damage to the lock or cylinder. I suppose it all comes down to a matter of what works best for you. At any rate, Thanks, Billy.

Broken Key Extractor

This tip expands on a tip that I read years ago on removing broken keys from ignitions with a spiral extractor. The tip was to remove the bow from the broken key, slide the modified key into the lock until it contacts the other part of the key and then slide your extractor down the milling and then bind the broken section and pull it out of the lock. The upper portion of the broken key serves as a guide for the extractor and also lifts the pins or wafers out of the way so they won't interfere with the removal of the tip of the key.

My tip is for keys with large millings like the 1990 Geo Prism that I recently encountered. The large .050" diameter blade of my extractor was not quite large enough to grip the millings tightly enough to allow me to remove the broken key and pull it out.

After a little thought, I put a small bend - at a 90° angle - about 1/2" from the tip of the extractor. Now when I inserted the extractor into the keyway and down the key's milling, the small bend on the end of the extractor was enough to grip the tip of the broken key and pull it out of the ignition.

John Blankenship
E Mail

Pull Plate Reinforcement

As an institutional locksmith, I find it necessary to make lock and hardware repairs as strong as possible. It seems that breaking door hardware is a hobby of many of our clients.

My tip involves the strengthening of Corbin Russwin Push/Pull Plates. But! I think this idea can be applied to other manufacturers products as well. The plate in question is the type where the handle is attached to the plate with two large nuts which screw onto a threaded portion of the posts of the "pull" side of the unit.

The first thing that I do is drill the center of the posts on the handles and tap the holes to make 1/4-20 threads on the in the posts. Next, I measure the distance between the centers of the holes that I drilled and tapped in the posts and transfer those measurements to the push plate. I drill those marks with a 3/8" drill (which allows me a little play to compensate for screws that might be a little of center).

Next, I use the push plate as a guide to mark my drill points on the door, drill through the door at that point and mount the pull plate as required. Then, I mount the push plate and use my 1/4-20 stainless steel screws with a liberal dose of thread-locking compound on them to through-bolt the push plate and pull plate-handle to the door.

Now, our "clients" can only pull the door open, and not pull the hardware off of the door.

Vernon Kelley, CRL
New Jersey

Editor's note: In the Public Sector - as in Public Rest rooms -I

have encountered the same type of problem as Vernon did with his clients. To make this type of installation as bullet-proof as possible and to keep exposed screws from tempting some bathroom bandit from vandalizing the hardware, I have used large fender washers under the nuts used to hold the handle on. The fender washers give the nut a larger gripping area and are not as likely to be pulled through the door. Of course, you have to allow for the washer to be countersunk Then the push plate is installed and covers up the nuts and washers.

Primus Rekey Fixture

As primarily a commercial locksmith with a number of clients on Schlage Primus - several of whom have multiple locations and regular employee turnover - I became frustrated with the sidebar and finger pin cluster while trying to do a quick rekey. As a result, I came up with a pinning fixture that really saves what little hair I have left!

I modified a Primus shell by removing a 3/8" section from the bottom of the shell. Then, I removed 1/2 of the 1st and 6th chambers of the bible *(see Illustration 60).* In a 3" length of 1"x1" channel iron, I machined a slot near the end to accept the shortened bible and fastened the modified shell to the channel with epoxy.

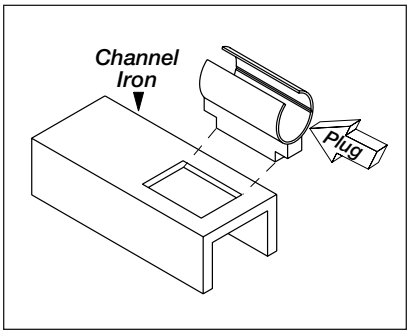


Illustration 60.

As you can see in the illustration, the shell should be located so the plug you are rekeying can be inserted upside down and backwards from normal. This allows you to load the pins through the opening in the modified shell, with the sidebar and finger pins being trapped in the shell. The alignment of the sidebar with the groove in the shell, allows old keys to be removed and new keys inserted for pinning.

Also, I cut a Primus blank down to just below a 9 depth in all chambers. I cut this special key laser style ((i.e., smooth) to allow the plug to be removed from the fixture and inserted into the working cylinder while fully loaded with pins and master pins.

This fixture makes my rekeying of Primus go much quicker. In fact, it's almost foolproof!

Ray Whitehead, CML
N. Carolina

Quick Storefront Opening

If you get a call to service the lock on an aluminum frame store front door and the problem is that the key won't retract the bolt because the thumb-turn, on the inside, is partially turned - try this:

Use a piece of bent spring steel (I used a vent window tool), slide it through the crack in the door and straighten the thumb-turn! Works easily and well. You can also try this method to open a locked store front when no key is available. You just have to keep working with your wire tool until you turn the thumb-turn all the way around.

Mike Corbett
Virginia

Rubber Bumper Door Opening

The other night I was called to an Office Park to let a tenant in their office. The key would turn the plug but the knob would not move and the latch did not retract. I felt the problem was either a jammed latch

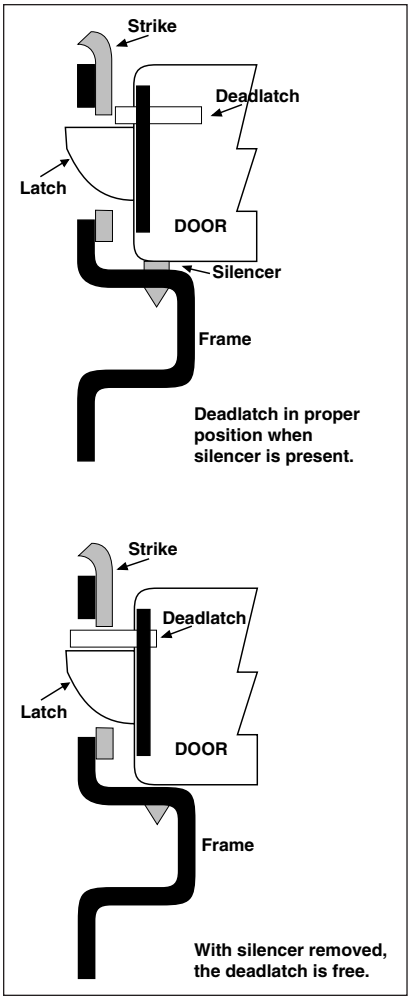


Illustration 61.

retraction unit, the latch had disengaged from the retractor mechanism or, the deadlatch bolt was jammed behind the lip of the strike preventing the latch from retracting. This method also works well on doors with high security cylinders that cannot be picked.

In this case it was the latch and deadlatch bolt being caught behind the lip of the strike as shown in *Illustration 61.*

As in similar situations, when I tried to move the door, there was no play in the door at all. In many doors this is because of small rubber cushions or bumpers that are build into the door stop that are known as silencers. These silencers are found on many commercial wood and steel doors on the latch side. When you encounter this type of lock-out, the door has often been slammed hard enough to compress the bumper sufficiently to allow the entire latch, including the deadlatch, to become trapped behind the strike. The binding on the deadlatch makes it just about impossible to retract the latch when turning the knob, lever, or lock cylinder.

In this case, I simply used a sharp, thin bladed pocket knife to cut the silencers and pulled them from between the door and the door stop. This gives me about 1/8" to 1/4" of play between the door and the door stop, relieves all the pressure on the latch, and allows it to retract properly.

In cases where the retractor malfunctioned or the latch and retractor became separated, removing the silencers creates enough room for the door to be pulled, allowing the deadlatch to fall into the strike area. This, of course, releases the deadlatch function and I can now use a Lemon Pop, credit card or other thin rigid material to move the latch to the open position *(see Illustration 61).*

Once I've gained entry, I can repair the lock (if necessary) adjust the strike and replace the silencers. Replacement silencers are available from most door and hardware distributors.

Al Zaniolo
Illinois

Schlage Lever Template

I'm employed by the Harlingen School District. About a year ago the old high school was remodeled and the contractor installed Schlage "D" series leversets throughout the campus.

Soon after school opened for the year, we began having chronic problems with people getting locked in the rooms. It turned out the problem was caused by an improper adjustment of the locks. They were not set for a 1-3/4" door thickness, causing the lock body to disengage from the latch mechanism.

We had about a hundred of these locks to refit to the doors and only had a few of the paper templates that come with the locks to work with. Of course it didn't take long for those templates to become unusable.

Illustration 62 shows an aluminum template that I made to speed up the re-adjusting of those 100 locks to fit a 1-3/4" door. I now keep this gauge and the Schlage bushing wrench held together in my toolbox with a key ring, ready for the next quick adjustment I have to make.

Sr. Gonzalez
Texas

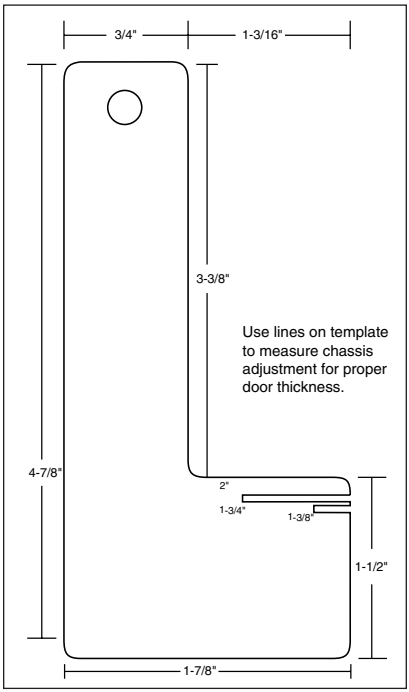


Illustration 62.

Bargman Lock Wafer

I do a lot of work on Bargman RV locks and when the wafers have been damaged, but the plug is intact, there has been no immediate answer short of replacing the entire cylinder.

After a lot of experimentation, I found that for the L-300 lock using the IN25 (K1122B) keyway, you can use the wafers from the Auto-Security Products A-16-104 keying kit for Datsun and Subaru.

Larry Kanzer
Pennsylvania

Replacement Springs

Save the extra two springs you get in uncombinated GM door locks. They are the perfect replacements for the springs that fly away when you are rekeying Schlage wafer doorknob locks; the locks that use key blanks SC6 and SC22.

Charles Sullivan
Kenvil, NJ

Servicing a Weiser A500

When I service a Weiser A500 series lockset without a key, I disassemble the lock without removing it from the door. To do this I pick the lock to the right, and then insert a piece of round spring steel through the keyway to push the tailpiece back. Then while holding the tailpiece I use a plug spinner to spin the plug past the shear- line to the left and rotate the plug to the 60 degree position to remove the lock.

John Archibald
Orem, UT

Cam Lock Rekey

I was on a job that called for rekeying a cam lock to get it on the same key as other locks in the store. The odd lock was the same type as the others in the system and had the same keyway. The problem was that I did not have any wafers that would fit the lock that needed to be rekeyed.

It so happened that all but one wafer could be arranged to match the store manager's key. Fortunately, the odd wafer was high enough (a number five) to allow me to remove metal from the inside area of the wafer which turned a number five wafer into a number two wafer *(see Illustration 63).*

Larry Wright
South Carolina

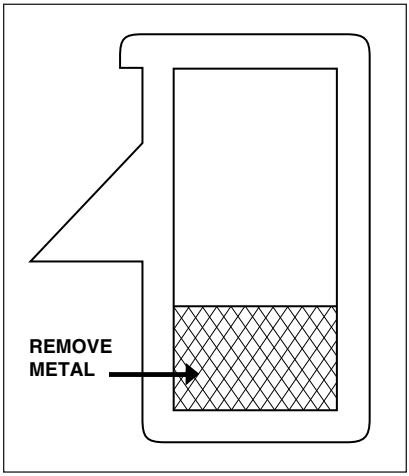


Illustration 63.

A Freezer Lock Alternative

Last year you wrote an article on cross-keying I-Core padlocks ("Puzzles, Padlocks, and Profits" THE NATIONAL LOCKSMITH , March, 1995, Page 49) on a given system so that when the perimeter doors where issued new cores, you did not have to change the padlock cores and consequently saved your customer money. At the same time you added to your sales by selling them padlocks and cores. I thought it was a good idea and gave it a try. It worked just like you said in the article. I then added a twist of my own.

One large building that my company services has a cafeteria with six entry doors and two service doors that have I-Core on them. The manager readily accepted the idea of using I-Core padlocks (keyed as you suggested) to secure various freezers. Later he called me to ask if I thought we could put the same type of padlocks on a number of cabinets and storage lockers. The only problem that I saw was that the cabinets were fairly expensive and having hasps, hinges and padlocks hanging from them might look a bit tacky.

I suggested that they use Olympus Sliding Door Locks (Part #722) and some Olympus #7211C Door/Drawer Locks. Using these Olympus locks gave the entire installation a professional appearance and did not look like an afterthought that padlocks and hasps would have.

I keyed the Olympus locks just like the padlocks. That is, I pinned only the three chambers that were compatible with the three chambers being held in the system for the doors or perimeter locks. The system I'm using in this area holds the first three chambers and varies the last three. All the keys issued for this system would operate the padlocks and cabinet locks if you do not pin the last three chambers, even when the perimeter doors had to be re-cored.

SAMPLE BITTING CHART:

KEY #1 - 1 7 1 2 2 0

KEY #2 - 1 7 1 4 2 0

KEY #3 - 1 7 1 6 2 0

KEY #4 - 1 7 1 8 2 0

KEY #5 - 1 7 1 2 2 2

KEY #6 - 1 7 1 4 2 2 ... and so on

I hope this idea helps another locksmith servicing I-cores to sell some extra locks and cores even if they don't get the rekey fee for the auxiliary locks each time the perimeter doors are changed.

Ann Wheatsford
E-Mail

A Spiral Extraction

Responding to a call from a customer who had broken their key off in the entry lock of their home, I found that the wrong key had inadvertently been jammed into the lock. Trying to remove the broken key with extractors proved fruitless. Not wanting to drill the cylinder of the lock, I decided to try one more trick to remove the jammed key from the keyway. I used a 3/64 bit to drill a hole about three-quarters of an inch deep in the widest part of the key blade that was visible. Then, I threaded a spiral type extractor into the hole, making sure that I had a good tight fit. Next I clamped a pair of needle-nosed Vise-Grip pliers to the end of the spiral extractor and began to firmly and steadily pull on the Vise-Grips. At the same time, I lightly tapped the top of the Vise-Grips with a small mallet. Although the key remained firmly in the keyway, I finally extracted the broken key. It turned out that the key was a Kwikset and the lock was a Schlage. When I asked the customer how they managed to get a Kwikset key into a Schlage lock, he told me he thought the lock had ice in it so he used a neighbor's hammer to try and "break through" the ice! Don't you just love do-it-your-selfers.

Kevin Martin
Alabama

All Plugged Up

While at a nursing home rekeying some Yale 8 cylinders, I must have dozed off while rekeying the second cylinder because I inserted the plug in the shell backwards. I quickly woke up after I had turned the plug and allowed the top pins to spring into place!

The location of the pin chambers are such that the #2 chamber in the plug lined up with the #6 chamber in the housing, the #3 with the # 5, and so on. The #1 chamber in the plug did not align with any of the chambers in the shell and the pin in that chamber would not lift but a few thousandths of an inch!

Since a working key could not be inserted into the keyway (because of the #1 chamber) I could not shim pick the plug to the shear line.

My solution was to duplicate the master key on another blank which I modified by cutting off the bow of that key and filed the #1 cut down low enough to pass the #1 chamber. Then, I inserted the modified key into the plug from the rear and pushed it in until it was positioned properly to create a shear line. I turned the plug with a small screwdriver and removed it in the customary manner.

After re-inserting the plug properly in the shell, I checked its operation and, since I do a lot of work for this facility, decided to put my "special" master key in a safe place just in case I decided to take another nap while doing a future rekey!

Raiford Ball, PhD, CRL
E-Mail

All Jammed Up

After too many call backs to service thumb turn mortise cylinders that had jammed, I found a quick trick to prevent further problems. Most of the thumb turn mortise cylinders that I have installed, there is a spring loaded ball in the plug to hold the cam in the upright position. When the chamber over the ball gets full of dirt and debris, the plug jams up.

To prevent this from happening, I tap the proper chamber (the holes already there) with an 8-32 tap and seal the hole (after lubricating the ball and spring) with an Adams Rite set screw. This prevents the problem from occurring.

Dave Vessels
Connecticut

A Turning Solution

A customer called complaining

that the lock on his store-front door seemed to malfunction overnight. It was working fine when he locked up, but he could not get in that morning. I suspected that someone had Super Glued his locks during the night and told him that it might be necessary to drill out the old lock and replace it with a new one.

When I arrived, I found the plug turned 180 degrees from its normal position. Apparently someone had tried to pick the lock during the night and when they rotated the plug to try unlocking the door, the top pins fell into the broaching on the bottom of the plug and trapped the plug in the upside down position.

Since I have encountered this problem several times in the past, I have Y-1 and SC-1 key blanks prepared as shown i*n Illustration 65*. As you can see in the *illustration*, I have simply cut these blanks down to their lowest depth. That way, they will pass any of the pins without raising them above the shearline.

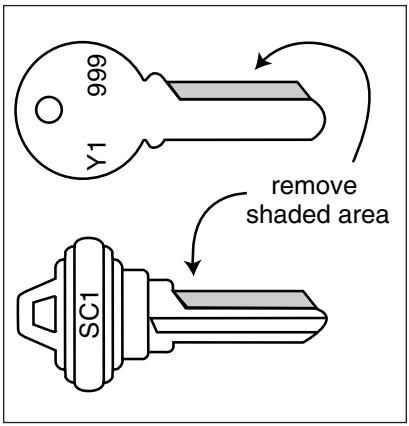


Illustration 65.

In this case the cylinder was a Y-1 keyway. I just used my Y-1 "turning tool" by inserting it in the keyway and turning the plug to the proper position. Then, using the customers key, I unlocked the door for him.

Another way I use my special turning tools is when I have to pick one of these locks open, I pick it to the point where the plug just turns slightly off center, then I insert one of my specially prepared turning tools and continue the rotation to the unlocked position.

Billy D. Jackson
Texas

Simple Plug Removal

I had to generate a first key for a Honda Three Wheeler (ATC 250). At first glance it appeared necessary to remove the switch housing, disassemble it and make the key. However, after doing that, I found that the cylinder's plug retainer can be accessed through the front of the keyway.

Using a hook-pick, I depressed the retainer at the rear of the plug and the plug came right out! If only I had known that earlier! At any rate, from the time you have the plug in your hand, key generation is simple, fast and easy.

On the side of the ignition housing I found what appeared to be a code designation. Unfortunately, it did not show up in my cycle codes.

Larry Kanzer,
Pennsylvania

[Editor's Note: Larry, often Honda and other cycle manufacturers use a piece of black tape on the side of their black switch housing to inscribe the codes. At best, these codes are difficult to read and frequently hard to get at. I have found it almost as easy to "read" the locks or impression them then to find and decipher the codes. In fact, it's been so long since I used the method you described, I thought cycle manufacturers had stopped using that type of retainer. Thanks for the tip.]

Latchbolt Lockup

A customer called complaining that she could turn the lock with her key, but the lock would not unlock. Suspecting a broken tail piece, I headed out for the customer's home. By the time I had gotten there, she had entered through another door, removed the thumb turn on the broken lock and literally destroyed the bolt mechanism trying to force back the bolt.

Examining the lock, I determined that the tailpiece and retainer was, in fact, operable which indicated another problem with the lock. Closer examination of the lock showed me that the bolt was indeed withdrawn, but the door would still not open.

The door was very tightly fitted to the jamb and I used a small pry-bar (like the ones painters use to pry open painted shut windows, etc.) and spread the door and jamb as far apart as possible. What I saw was the two screws which hold the latchbolt to the door had loosened and was gouging into the strike, effectively "locking" the door.

I pushed the screws back with an ice pick and opened the door. After filling the screw holes with little wooden plugs that I carry — with Locktite on them — I let them dry a few minutes and replaced the damaged bolt. The lock worked fine.

James Harding
Delaware

[Editor's Note: As James' tip proves, the problem is not always the most obvious one. For the newer locksmiths out there and maybe some of the older ones who might not have encountered a similar situation, when a customer calls to say that the lock is not working check the lock first and if you don't find a problem with the lock, check for a bind somewhere else on the door. That includes checking for loose strike plates and protruding or improperly installed screws. It may even mean taking old Mother Nature into account.]

Schlage Cylinder Spacer

Every now and again, I find it necessary to use a 5-pin Schlage cylinder to replace 6-pin cylinders in Schlage locksets. Frequently, I do not have the clip or spacer that Schlage makes for this conversion.

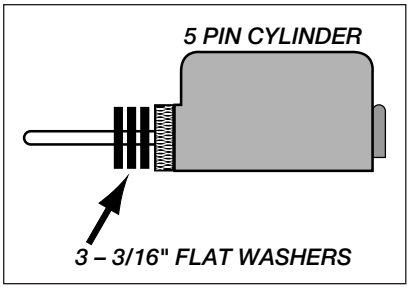


Illustration 79.

Recently, I found a quick, simple solution to the problem. Place three 3/16" washers over the tailpiece and against the plug retainer. Just make sure that the cylinder has the long tailpiece (they usually do) on it *(see Illustration 79).*

George Lazich
Wisconsin

Spring Cover Replacement

Have you ever lost the cylinder cap retaining pin screw in a Schlage or Weiser cylinder, only to find you did not have a replacement?

When this happened to me recently, I found that cylinder spring from my G.M. pinning kit worked very well as a substitute. Since then, I have used this "trick" on several occasions.

Joe Stofferahnt
Minnesota

Primus Plug Short Cut

When master keying Schlage Primus, you must have the proper side milling on the Primus key in

order to move the finger pins so the side bar retracts. Also, you need the key in the cylinder to hold the finger pins and springs in place while removing or installing the plug.

To keep from top loading the master pins, I cut a Primus key to all number nine cuts. After removing the plug from the cylinder, I put it in a plug holder, remove the key and put the key with all nine cuts in the cylinder. This allows me to key the plug with the bottom and master pins and reinstall it in the cylinder without having to top load.

This sure saves us a lot of time.

Gene and Jim Rowh,
New Hampshire

IC Key Control

I do a lot of I-Core service work and have found two common problems that lead to complaints about "those keys you made me don't work."

The first problem occurs when the bottom milling on an interchangeable core key gets bent or distorted. The customer cannot get the key to enter the keyway when that happens and will quickly call you to tell you your key doesn't work.

The solution is simple. Just take a small file and file the milling back to its original dimension. Sometimes, you have to first take a small-bladed pocket knife or similar object and open the milling a little before filing.

The basic cause of the problem stems from customers using their keys to beat, poke and pry on things like paint can lids and paper staples. However, it can occur when the key is carried on a large ring and is constantly being hit against other keys, etc. So, before cutting the customer a new key, check the bottom milling first.

The next problem occurs when the locks are in a dusty, oily or highly contaminated environment. Dust and other air-borne debris tend to enter the keyway. When the key is inserted, these contaminants are pushed to the back of the keyway and begin to build up against the key stop. With the tolerances being as tight as they are in an interchangeable core plug, it does not take long before the debris in the keyway will prevent the key from operating the plug.

If you cannot clear the stop with the core in the cylinder, you will have to remove the core to correct the problem. To do this, cut a control key and file back (just a little) on the leading edge of the key stop *(see Illustration 85)*. If you don't file enough the first time to allow the control key to work, continue filing a little at a time, until the plug turns to the control shear line.

Once you have the core in your hand, you can perform whatever service is necessary to correct the problem(s).

Tom Gallian, CPL
North Carolina

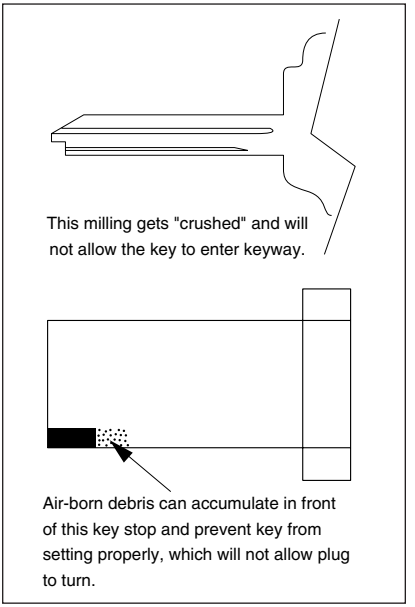

This milling gets "crushed" and will not allow the key to enter keyway.
Air-born debris can accumulate in front of this key stop and prevent key from setting properly, which will not allow plug to turn.

Illustration 85.

Changing A Simplex 2000-15 Without A Control Key

Here's a tip I would like to pass on regarding changing the combination on a Simplex 2000-15, when there are no control keys available to enable one to remove the front plate assembly from the door so the plunger on the combination chamber can be activated.

First remove the panic bar or exit device from the inside of the door. Then, go to the front of the door and measure down 3" from the top of the combination lock and transfer your measurements to the inside of the door. Drill a 1/4" hole through the door and the back lock plate on the combination lock. Then, simply change the combination as you normally would. Instead of depressing the plunger of the combination chamber down from the front of the lock, you would use a small probe to reach through the hole you drilled in the back of the lock mounting plate to depress the plunger.

Troy Sullivan,
Newfoundland

[Editor's Note: For those of you not familiar with Simplex's 2000-15, this series was designed to give digital access capabilities to most brands of surface mounted panic and exit devices. To change the combination on this series of locks, the entire front lock plate has to be removed. That can only be accomplished without damage to the lock, if you have the control key or your picking skills are equal to the task. I would caution anyone using this tip to drill carefully and do not penetrate any further then through the back locking plate. Once you have a hole drilled, you can use almost any type of light or scope to easily locate the plunger at the top of the combination chamber.]

NOTES

NOTES

Troublesome Deadbolt Install

I have always had difficulty installing a latch or a deadbolt on a metal door that had a seam running down the center of the door edge. Not only have they been hard to work on, but even with Afco tabs, getting everything cut out to accept the bolt or latch face so it would look professionally installed pushed me to my limits.

The other day I encountered a center-seamed door edge and I did not have tabs on my truck. I decided to try and work with what I had and came up with the following tip that I believe will make it easier for my fellow locksmiths the next time they have to work on one of these doors.

The first thing that I did was cut my edge bore hole through the edge of the door *(see Illustration 66)*. Then, I added the thickness of the doors metal (about 3/16", including the fold of the seam), and added that measurement to my backset measurement (2-3/8") for a total backset from the front edge of the door of 2-9/16".

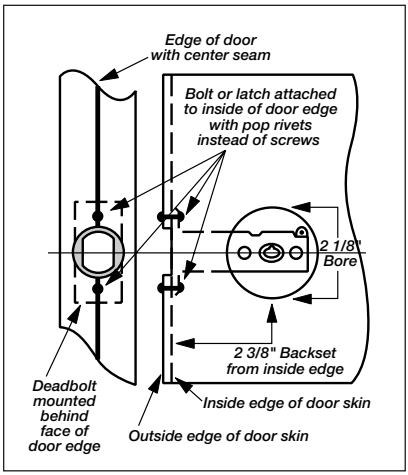

Edge of door with center seam
Bolt or latch attached to inside of door edge with pop rivets instead of screws
2 1/8" Bore
2 3/8" Backset from inside edge
Deadbolt mounted behind face of door edge
Inside edge of door skin
Outside edge of door skin

Illustration 66.

I marked this on what would be my lock centerline and cut a 2-1/8" crossbore hole. Next, I placed the lockbolt against the edge of the door and marked the screw holes so I could drill a 3/16" hole for my pop rivets.

Then, I put the bolt inside the door and against the inner edge of the door's skin. When I lined up the screw holes I inserted a pop rivet put a small washer over the inner portion of the rivet and drew the rivet tight with my rivet gun. I did the same thing for the bottom screw hole. Then I mounted the rest of the lock in the normal manner.

What I learned here was a new way of handling a troublesome installation and that the bolt is more secure and will wobble less when mounted in this manner.

Don Rolachineski
Virginia

Deadbolt Aligner

Installing deadbolts and cylindrical locks into a door is not a difficult task. However, lining up and positioning for the hole in the jamb to receive the bolt can be time consuming.

To be on target every time for both the latch and the bolt, I have taken a deadbolt, cut 10mm off the end to expose the hardened steel pin; then I grind the pin to a point central to its diameter *(see Illustration 67)*. Finally, I bevel the edge of the remainder of the bolt sufficiently to prevent it from catching on the bolts casing.

Its use is now very obvious. After preparation to the door is complete for both the lock and bolt, insert the doctored bolt where the latch or bolt will go. The, with the aid of a screwdriver, force the point of the hardened pin into the jamb. Here is

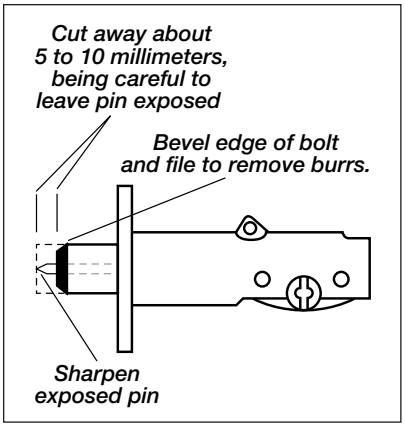


Illustration 67.

a clear center to drill for mounting the strike plate and to receive the bolt or latch when thrown.

Tony Vinton,
New Zealand

Strike Mortising

Here's a quick tip that makes for a more professional looking job when installing deadbolt or door knob strike plates. I screw the plate onto the jamb first and then use a razor or knife blade around the edges of the strike plate rather then marking it with a pen or pencil.

Then I unscrew the strike plate and chisel out the wood between the cuts that I made. This really helps me to get "sharper" edges for the strike installation - especially in older homes with many coats of paint on the jamb that will crack off in large chunks if you just try to chisel them out.

I know there are strike mortising tools on the market, but even these can cause chipping and splintering when the door or jamb has been heavily repainted time and time again.

George Henderson
South Carolina

Trilogy Install Tip

When instating the Alarm Lock Trilogy, drill all of your holes as you would for a Simplex 1000. This will give you a very convenient hole to store the extra length of wire Alarm lock provides you with. Also, you won't need to buy any new installation jigs.

And, if for some reason, you would later need to install a Simplex on the door, the mounting holes are already there.

Steve Kaschimer
Arizona

Tack Hammer Facecap Installation

When replacing the face caps on GM or Ford 10-cut door locks, slide the cap onto a flat ended punch or piece of rod. Place the spring(s) and shutter into place and pushing down on the shutter with the flat punch or rod, slide the face cap over the shutter, etc.

Now, hold the assembly together with your thumb and index finger and set the punch or rod aside. Place the cylinder on your work bench with the face cap and shutter, etc. facing down. Now, just bend the tabs over and your job is done.

To help ease the bending of the tabs, I bought an upholsters tack hammer and removed one prong with a hacksaw. (The head of this hammer is split in half and is magnetized for picking up tacks. The tip is to remove one side of the hammer head.) Holding the cylinder tightly down on my workbench, all I do is hit the tab with the hammer's prong and bend it over.

If you decide to use my tack hammer approach to bending the face cap tabs, you want to cut off the right side prong (with the prongs pointing downward) if you're right-handed If your left-handed, cut off the left prong.

Steve Stanhope
Texas

Cash Box Cam Lock

A recent service request was to install new cam locks on several

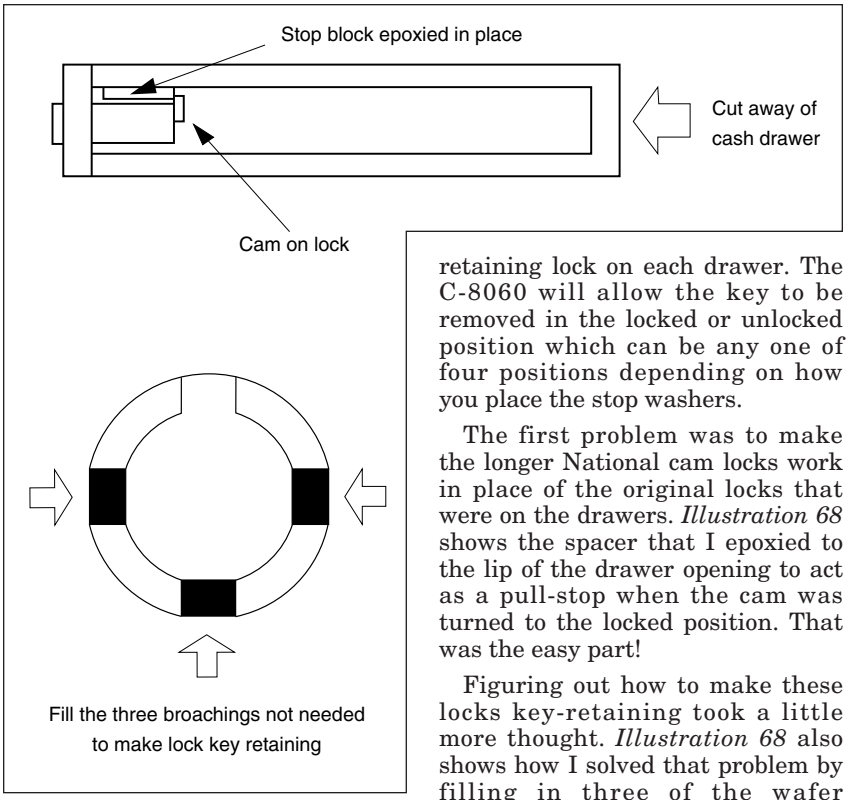

Stop block epoxied in place
Cut away of
cash drawer
Cam on lock
Fill the three broachings not needed
to make lock key retaining

Illustration 68

cash drawers in a local business. Over the years, the original cams had been broken or distorted, the keys lost and in some cases the locks were missing altogether. As usual, it was a "hurry up, we've got to have this done right away" type job.

When I got to the job site, I found I did not have the type of cam lock that was original to the registers. I told the manager that I could order the locks but it would take a couple of days for them to arrive. He said he needed the work done "Now!"

The only cam locks I had on my truck on my truck were some National C-8060, 1-3/4" Cam Locks which on first thought, would not work because they were too long for this particular application. Besides, the customer wanted a key-retaining lock on each drawer. The C-8060 will allow the key to be removed in the locked or unlocked position which can be any one of four positions depending on how you place the stop washers.

The first problem was to make the longer National cam locks work in place of the original locks that were on the drawers. *Illustration 68* shows the spacer that I epoxied to the lip of the drawer opening to act as a pull-stop when the cam was turned to the locked position. That was the easy part!

Figuring out how to make these locks key-retaining took a little more thought. *Illustration 68* also shows how I solved that problem by filling in three of the wafer broachings in the lock cylinder with a quick setting epoxy. This epoxy comes in a single stick that has both the "A" and "B" parts together. You can find it at most automotive parts stores, plumbing supply houses and some hardware stores.

At any rate, I filled the three broachings I would not use with epoxy as shown in the *illustration.* While the epoxy was still workable, I used the butt or shank of a drill bit to smooth the epoxy and press it into the broaching. You don't have to get it even with the inside diameter of the cylinder, just make sure there is enough epoxy in each broaching to prevent the wafers from moving upward into the broaching and allow the key to be withdrawn. And, of course, make sure the epoxy is completely set before you insert the plug in the cylinder.

After the epoxy had set, I tried the plug to make sure it would turn freely in the cylinder. If one bound in any way, I used a small round file to adjust my tolerances. Next, I checked to make sure that the key could only be removed in the locked position.

Problem solved. And, yes, I did charge the customer accordingly.

Pete Gamble
North Carolina

The Third Hand

Like other locksmiths, I'm occasionally asked to do something else while I'm on a job. A frequent request at the many new homes being built in my service area is to install brass kick plates that the customers have purchased and then found out they didn't know how to, or just couldn't, install them.

In the beginning, I often regretted agreeing to do this something else because it was difficult to install these kick plates as I never seemed to have the third hand that I needed to hold one thing or the other while I got the first couple of screws started to keep the kick plate in alignment. Often, I would have to make several attempts before I got everything lined up the way it needed to be and on the door.

About a year ago, I found my third hand in the local hardware store and I haven't hesitated to do this something else for any customer that asks me to. In fact, if I see a kick plate in the garage, or on the front porch of a customer's home that needs installing ... I let them know, that for a small fee, I would be happy to install it while I'm installing their deadbolt or whatever. It's a quick, clean way to pick up a few extra dollars.

I have also used my third hand top hold push-pull plates and other hardware that is difficult to control, in place while I'm getting my first couple of screws started. What is it? Why, it's nothing more than double-faced carpet tape! I buy a couple of rolls of 2" wide double-faced carpet tape every few months or so.

Then, when I need a third hand to hold a kick-plate, push-plate, etc., I just run a strip or two of the tape down the back of the item, stick it in place on the door and it stays there until I get all of my screws inserted. Try it! I think it's great stuff!

Charles F. Manchester,
E-Mai

Solving Master Tailpiece Hang-Ups

When installing Master Lock deadbolts, I have encountered a problem with some of the tail pieces binding after retracting the bolt. When doing so, you try to remove the key and find that the plug is not lined up properly to release the key. Recently, I installed six of these deadbolts and four of them bound up on me when I tried to make the half turn back to the 12 o'clock position after unlocking the lock and trying to remove the key.

The problem apparently stems from a rough projection on the tail piece that is created during the manufacturing process. This projection hangs up on the cylinder boss, causing the lazy cam to

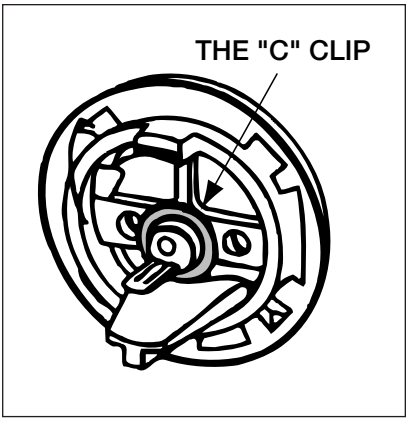


Illustration 69.

malfunction by not turning all the way around to it's proper positioning to enable the key to be removed.

To rectify this problem, first remove the "C" clip which holds the tail piece to the cylinder *(see Illustration 69)*. Remove the tailpiece and place it on the edge of your work bench and gently file the end until smooth.

Reassemble the lock and check for proper operation before re-installing on the door.

Larry Kanzer
Pennsylvania

Strike Off

After reading Clyde Smalley's trick about mortising strikes into concrete filled jambs in the April issue of The National Locksmith (See Technitips, page 98, April, 1996), I had to write in and tell you the trick I use.

When we mortise a strike for a wood frame, we remove a larger amount of a weak material (the wood) in order to attach a stronger material (usually brass) and thereby strengthen the frame. I don't see what you gain by removing a larger amount of steel and replacing it with brass as on a steel jamb. Besides that, what do you do when the material behindthe steel jamb is irregular; such as brick and the strike will not lay flat. Or, worse yet, the material in the jamb is crumbly or set back from the jamb?

I mark the jamb for the strike place the strike over the mark and trace around the inside of the strike. I then cut that hole out with my Moto-Tool, clear out the concrete or other material and I'm done. It's the strongest possible situation. There are no screws or shields to ever come loose and there's no guesswork and it looks great.

Illustration 69A, shows the area that I cut out. It's a lot less work and I think it looks just as good.

Tony Wiersielis, CRL,
New Jersey

[Editor's Note: Tony: Thanks for the tip. As I re-read Clyde's tip in the April issue, I think he was talking more about aesthetics. However, by surface mounting a strike plate and pop-riueting it to the frame I think you get as much security as you can.

When Clyde mortises his strikes into the jamb, he anchors the screws with anchors.]

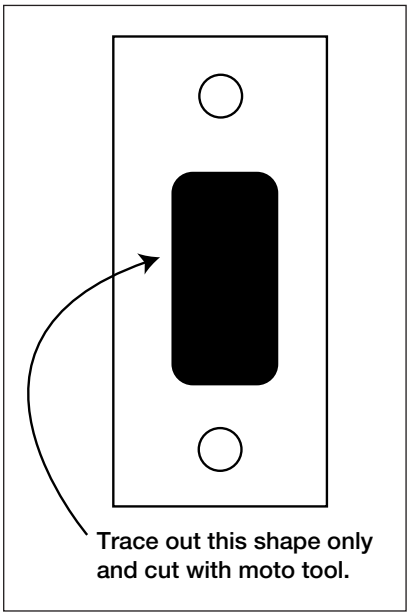


Illustration 69A.

FireKing Bypass

I've had several calls where the key to a FireKing fireproof file cabinet have been locked inside the cabinet. These keys are high-security keys and can only be ordered from FireKing if you have the code.

The locks can't be picked and are hardened against attack. Here is a way I have found to open one of these cabinets, retrieve the keys

and not damage the fire rating *Illustration 53.*

First remove the three screws in the back of the cabinet that hold the sheet metal top on. Once the cap is removed you will see a slab of insulation material.

As seen in *Illustration 53*, measure 1-5/8" in from the front of the cabinet and 3-3/16" from the right edge. Now drill a 3/8" hole, where the two lines intersect, straight down through the insulation.

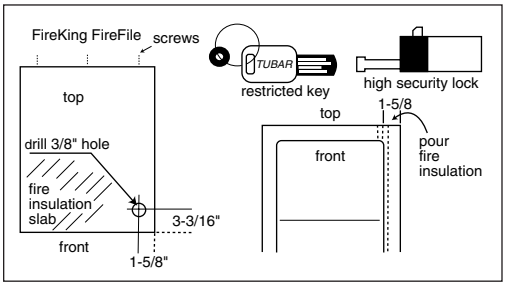


Illustration 53.

Take a 1/4" rod eight to ten inches long, place it in the hole and force the locking rod down which will unlock all the drawers.

The repairs are easy. Put a paper plug in the bottom of the hole and fill the hole with after-market fire insulation material. Replace the metal top and screws when the filler is dry and the job is finished.

William Hudson, RST
Virginia

[Editor's Note: William's tip will get you into a FireKing file cabinet. Unfortunately, drilling the insulation material will violate the integrity of the UL rating and if I understand the manufacturer's specs the only way the UL rating could be reinstated on that particular cabinet would be if the repairs were made by a factory authorized rep, using factory specified materials and procedures. Of course, when a customer needs to get into a container that contains vital documents, UL ratings often have to take a back seat to expediency. Besides, William's method allows a repair to be made that will not show when finished. It's fast, clean and neat.]

Burless Safe Drilling

Anyone who has ever drilled a safe knows how messy the shavings can be and how quickly they can get under your skin if you kneel on them or how hard they can be to clean out of a carpet that they have fallen on.

Here's a way that I have found to keep my work area clean and free of most of the shavings that are generated when I find it necessary to drill a safe door, or try to keep my hole in a in-floor safe debris-free.

Get several barrel-type magnets (like the ones used in contact switches for alarms or enunciators). When you drill a floor safe, you can use one to remove the shavings from the hole and keep it clean. When you drill a regular safe door, you can place one or more under your drill point to keep the shavings from falling to the floor.

These magnets can also be used to hold working notes to the safe door close to the work area for speedy reference.

David M. Dowe
E-Mail

Easy Weiser A630 Thumb Piece Alignment

We seem to run into more than our fair share of A630 Weiser Handle sets in our service area. After rekeying one of these units, trying to re-install the locking unit often turned nightmarish because of the difficulty in trying to blindly align the tail of the thumb piece with the hole on the retractor.

As you try to re-assemble the

unit, the hole on the latch retractor would slide to the side making the alignment of the two pieces nearly impossible unless you had the luck of a lottery winner!

After much frustration, trial and error, here's how we solved this tricky alignment problem:

As soon as you remove the locking unit from the back of the handle set, clamp the locking unit in your vise. Measure down 2-1/8" from the narrow end of the unit *(see Illustration 88)*. Drill a 3/16" hole from the backside of the unit through to the latch retractor. By drilling from the back, you prevent drill shavings from falling into the locking mechanism.

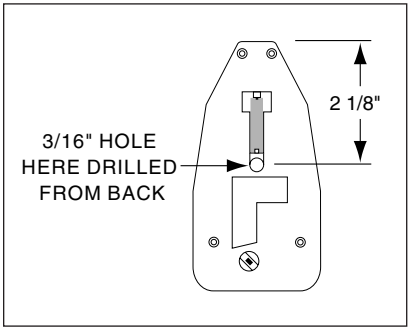


Illustration 88

Now, to quickly and easily re-install the locking unit on the handle body, just use any small probe-type tool through the back of the unit to maintain alignment of the retractor in the center of the slide opening. You can also observe the tail piece of the thumb latch sliding into its proper position.

Believe me! This works the first time, every time!

Bob Scott,
Florida

Schlage Attaching Screw Template

As most of you are probably aware, Schlage deadbolts, like most deadbolts, have an actuator bar (tailpiece) that can break rather easily due to too much torque being applied by the key. This can be caused by a mis-aligned door, weather stripping that has been applied too tightly to the door, building settling or any number of reasons.

Regardless, the results are the same: a lockout. And, if the actuator on the outside cylinder of the lock is the one that breaks, you don't have much recourse except to drill the lock if you can't find another way into the premises.

When trying to drill for the mounting screws on Schlage or other types of deadbolts, it is easy enough to be slightly off the mark, which of course slows you down and can look less then professional.

What I have done to prevent this is use an interior cylinder housing as a drill guide. Simply place the face of the interior cylinder against the face of the exterior cylinder and make sure the cylinders are aligned around their circumferences. Now use a 1/8" bit in your drill motor and insert the bit through the mounting screw holes of the interior cylinder. Nudge the drill motor trigger to "mark" the drill site of each mounting screw hole and set the interior cylinder to the side.

Now, drill on your marked drill sites straight through the outside housing. Most of the time, you'll "walk" the mounting screws right out of the lock. That turns your lockout into a quick and profitable job.

Chris Weber
Florida

NOTES

Thick Door Deadbolt Modification

I was called to install a single cylinder Kwikset deadbolt for a customer. When I got to the job, I found that the door the customer wanted the lock on was 3" thick! I knew I had a problem since I did not have a Kwikset tailpiece long enough to work on such a thick door.

After thinking about it for awhile, I cam up with the following solution:

I removed the standard tailpiece and cut it nearly (crosswise) in half. Then I used a piece of square stock that I had on the van to "lengthen" the tailpiece *(see Illustration 70).*

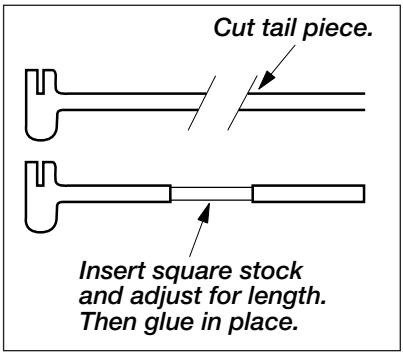


Illustration 70.

The square stock that I used was a tight fit in the tailpiece, but I Krazy Glued the stock and tailpiece halves together to make sure they stayed that way! After six months, the lock still works perfectly!

P. Alphonso
New York

Residential Steel Door Repair

Nearly everyday, I seem to run into more and more steel doors in new or remodeled homes. I have been encountering a number of problems when installing locksets in these doors because of the way the doors are made.

The doors are not actually steel, but rather a wood frame (the stiles and top and bottom rails) that is foam filled and sheeted with a very light gauge metal sheeting. There are two designs that I have worked on where the rails tend to split when installing screws or there is not enough wood to allow proper mortising for the latch without splitting the stile. In fact, I've even had stiles split when I tried to mark my mortise with a mortising tool.

On some of these doors, the stiles are only 1-3/8"x1-1/2". You will find some where the sheeting comes all the way to the edge of the stile and others where it stops just about 1/8" or 3/16" from the edge of the door. This type door can cause real problems with mortising since there is usually less than 3/16" of wood left on either side of your latch mortise.

Another problem I encountered has been with cutting the cross-bore holes. If the door has a 2" or 2-1/2" stile, cutting the cross-bore hole is fairly simple. If, on the other hand, the stile is under 2" wide, as your hole saw penetrates the sheeting, it can easily bind and cause the sheeting to distort. And, that can happen no matter how carefully you try to cut your hole.

Consequently, when I come across this type door construction, I explain the potential problems to my customer and tell them that the only way I will install a lock on that particular style of door is if they agree to allow me to install a M.A.G. Install-A-Lock, or a M.A.G. Uniforce. Of course, I point out that the addition of either of these products will substantially increase the overall strength of the door as well as help prevent installation problems.

However, even with the Uniforce, I have had occurrences where the stile has split (even after drilling a

pilot hole) when I have run the screws in the edge of the door. By drilling 1/4" holes at each end of a split and with a little epoxy, a little sandpaper and some paint the door repair is complete.

I hope this information helps another locksmith avoid problems with these doors. Mainly, just be careful and keep your eyes open since you can get into a bad situation with these types of doors very quickly. Believe me ... I know.

Jimmy Sharpe
E-Mail

Pivot Hinge Door Repair

A recent request for service involved the complaint that "our back door doesn't close right." This was followed by the request to "Check it out while you're here, will you?"

After completing the original work the customer had requested, I went to take a look at their back door. It was easy enough to see the problem was the closer. First off, it was an economy closer like those you see for sale in a lot of discount building supply houses. Secondly, it was improperly mounted on the door.

Whoever installed the closer put a very light duty closer on a heavily used, four foot wide door that was probably opened a hundred or more times a day. To compound the problem, the installer had mounted the closer on the header (the door was an out-swing), and tried for a regular arm style mount with the closer arm mounted to the door.

Over a period of time and a couple of strong wind gusts, the 1/4" carriage bolts they had used to secure the arm to the door had pulled through the outer skin of the door and were ready to break through the inner skin. Since the closer had no back check feature, the door had slammed back against the hinge side which had broken the top hinge mount bracket loose from the inside stile of the door.

The hinge problem was corrected with a Hager Pivot Hinge. When I took the old closer off the door, I found that the damaged area of the door was exactly where the new closer would mount, although the mounting bolts would bracket the damaged area.

Since I didn't want the "tear" (which was about three inches by three inches) to be seen, I elected to use a M. A. G. Engineering Blank Channel (Part #80-S) to cover the area where the old closer arm had torn through the door's skin *(see Illustration 71).*

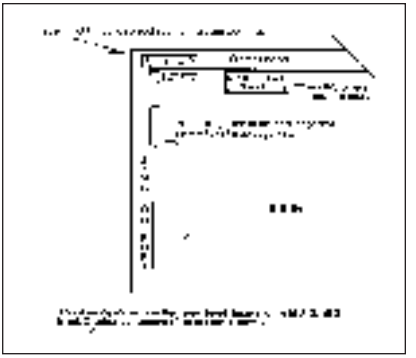


Illustration 71.

The M.A.G. channel covered the area nicely, giving the bolts on the latch side of the closer I installed something extra to "bite." This saved the customer the cost of a new door and didn't look too bad either.

In a recent TNL article ("The Revolving Commercial Hardware Door", November, 1995, page 56,) Steve Gebbia said that if you were going to work on commercial hardware and door repairs, you needed to think of unique approaches to solve your customers problems. I've used a lot of M.A.G. blank channels to cover damage around latches, but this was the first time I used one to repair damage to the top edge of the door.

Jay Christie,
N. Carolina

A Planer Solution

When I received the job to install door knobs and dead-bolts on an 85 room motel, I knew it would take a lot of time to mortise out each and every face plate and strike mortise.

To speed things up, I purchased a small hand-held wood planer with an adjustable depth blade. After marking the mortise with my chisel, I would set the blade to the depth that I wanted, and a few passes of the planer gave me an even and square hole.

This method also creates fewer problems because of split doors.

Michael A. Collins,
Idaho

Strike Plate Solution

I install a fair number of locks on steel doors with concrete filled frames. Because of the difficulty in drilling or tapping holes in the frame to receive the latchbolt or to attach a strike plate, I have often simply drilled a one inch hole in the frame, cleaned out the concrete with a chisel and hammer and simply made sure there was no rough edges sticking out to snag someone's clothing or cause a cut to curious fingers.

However, I always felt that this type of installation lacked a "professional finish" and simply did not look right. Here's what I now do to make the job look finished and neat.

If there is enough clearance between the frame and the door edge, I use a Dremel tool with a fiber-glass/carborundum cutting wheel to cut out a square hole for the bolt or latch to recess into *(see Illustration 72A)*. I then mount the strike plate by drilling a 3/16" hole almost through the steel. Just about the time the bit is ready to break through the jamb, I switch to a 3/16" concrete bit and continue to drill into the concrete about an inch and a quarter. Using a Pop-Rivet tool, I mount the strike plate to the door jamb.

If there is inadequate clearance for the strike plate to be surface mounted, I use my Dremel Tool to cut out a rectangular opening large enough to accept the plate as a "flush mount." At this point, I do not cut the concrete out of the jamb to accept the latch or bolt of the lock that I'm installing. What I do now is mark the location of the two holes in the strike plate and drill a 3/16" hole to accept a plastic anchor. Next, I screw the strike plate to the anchors *(see Illustration 72B).*

The next step in the flush mounting of the strike plate is to use a 3/16" concrete bit to drill a series of holes into the concrete - using the strike plate's opening as a template - all the way around the opening of the strike plate. I usually drill these holes about an inch to an inch and a quarter deep. Then it's simply a matter of cleaning out the concrete with a small chisel or an old screwdriver blade.

It does take a little longer to install a lock in this manner, but I think the results are worth the trouble. The retro-fit has more of a factory appearance and I feel better about the job since it looks more professional.

Clyde Smalley
E-Mail

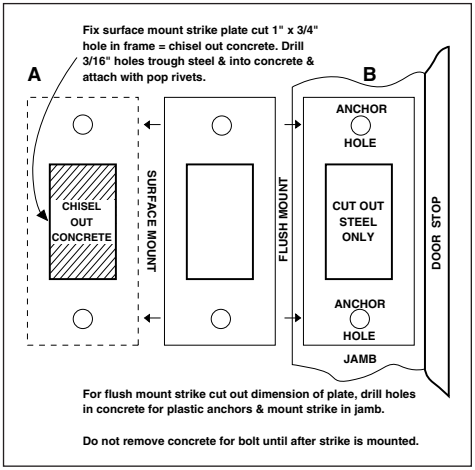

Fix surface mount strike plate cut 1" x 3/4" hole in frame = chisel out concrete. Drill 3/16" holes trough steel & into concrete & attach with pop rivets.
A
B
ANCHOR HOLE
CHISEL OUT CONCRETE
SURFACE MOUNT
FLUSH MOUNT
CUT OUT STEEL ONLY
DOOR STOP
ANCHOR HOLE
JAMB
For flush mount strike cut out dimension of plate, drill holes in concrete for plastic anchors & mount strike in jamb.
Do not remove concrete for bolt until after strike is mounted.

Illustration 72.

Permanently Mounting Sectional Trim

A problem a locksmith will often encounter on wood door preps for full mortise locks is loose sectional trim. This problem is often due to the thinness of the door material that is left after completely mortising the door to accept the lockcase. Because there is so little thickness left, there is very little wood to hold the mounting screws that hold the trim in place.

Here is a simple, cheap and proven method for securely and permanently mounting sectional trim such as knob roses, turnpieces, occupancy indicators, latch guards and other hardware under less then ideal contains.

Remove the lockcase and drill through each of the desired mounting hole locations and insert a "T" nut *(see Illustration 73)* of the appropriate size inside the mortise cavity. Then using a machine screw (usually a 6/32 or an 8/32), cut to the proper length and attach the required trim to the face of the door.

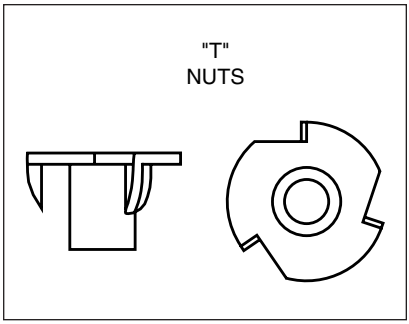


Illustration 73.

I have found that oval, Phillips head machine screws in brass of stainless steel, depending on the locksets finish, will give a professional appearance to the completed installation. You need to use machine screws to fit the "T" nuts since the mounting screws that come with the lockset have a coarser thread then the "T" nuts.

You can obtain "T" nuts in many hardware stores or at any machine shop supply house.

Peter P. Schifferli
New York

NOTES

Opening Maximum Fire Safe

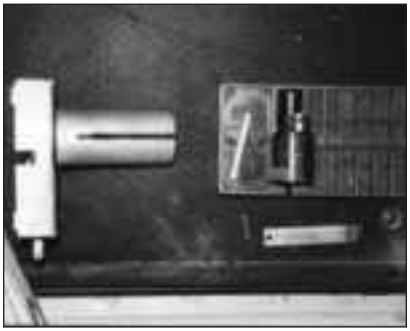
Here is a tip for opening the key lock on a "Maximum" brand fire safe. The keyway on these safes is kind of small which makes picking difficult. And, if you drill it, you may find the lock hard to replace, not to mention having to make a second trip to the job. So, here's what I consider the easiest way to open these units when the owner has lost their key.

On the front of the safe, there is a chrome escutcheon that screws to the horn of the lock! Simply unscrew the escutcheon and you can look down the right side (3 o'clock position) of the cylinder housing. About 1/4" in from the face of the lock, you can see a set screw This screw is your target *(see Photograph 3)*!

Remove the set screw anyway that you can. I have found that using a combination of a small chisel to turn the screw like you would a one way screw on a foreign car column and a pair of needle-nosed pliers works best for me.

Since this lock is a rim-type lock with a straight tailpiece, all you have to do, once you have removed the set screw, is to simply rotate the entire cylinder and the lock will open *(see Photograph 4)*. You might bend the tail piece slightly, but that can be straightened out easily enough.

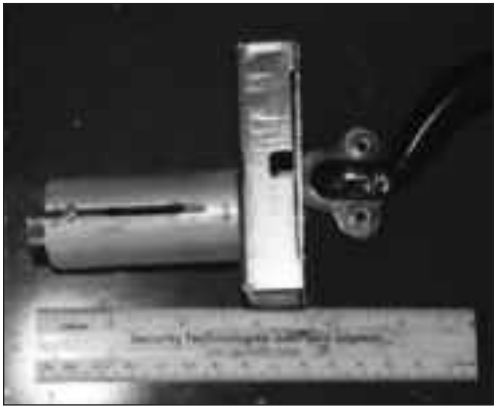
With the door open and the cylinder in your hand, all you need is a V61A key blank (I found the Volvo gas cap key blank works well in this cylinder) and a curved shim. Shim pick the cylinder from the rear, remove the plug, read the pins and cut an operating key for the lock.



Photograph 4.

Then, reassemble the entire lock, mount it on the door and collect your money from a happy customer.

Todd J. Kerrn
California



Photograph 3.

A Safe Fix

I have a customer that has an old fire-rated safe that I have worked on several times in the past. And, when I have the back cover off the door, I've noticed that the insulation was crumbling and breaking away from the outer skin of the door.

Just recently, my customer called to say they could not get the door open. When I got there and ran the

combination, I could tell the fence was dropping and the bolt seemed to be retracting properly. I suspected that maybe a piece of the insulation material had fallen and blocked the bolts since the handle appeared to turn slightly, but not enough to retract the boltworks.

I chucked a vibrator tool I made out of an old "C" clamp screw into my drill and began running it over the surface of the safe door and working the handle back and forth at the same time. After about a minute the handle retracted the bolts, and the door was open!

Needless to say, the customer had me fix the loose insulation!

Louis Woodson
Arkansas

Easy Emergency Dial

I was asked to open a burglarized safe at a ready-mixed concrete plant. The would-be crooks had attacked the safe without getting it open. During their attempt to get at the $100 petty cash fund, they knocked off the handle, the dial, the dial ring and beat on the hinges. The dial spindle was broken almost flush with the face of the safes door.

I thought that with a little luck, I could attach my emergency dial to the spindle and get the unit open for my customer without drilling. As you have said, Jake, Murphy and Mother Nature had other plans for me that day. I couldn't find my emergency dial - anywhere!

While rooting through all the odds and ends in my truck, I came across an old S&G dial with the spindle broken off flush with the back of the dial. Here's how I used that old S&G dial as an emergency dial to open the safe:

First, I wedged the spindle of the safe so that it would not turn and drilled and tapped it to receive a 6-32 screw about 1-1/2" long. Before inserting the screw, I coated the threads with a liquid epoxy so that once set, the screw could not be loosened.

While the epoxy was setting, I prepared the old dial by drilling a hole slightly larger than the 6-32 screw completely through the spindle and out through the center of the dial face. Then at right angles to that hole I drilled and tapped two 6-32 holes into the knurled turning surface of the dial. Those holes intersected with the hole through the spindle *(see Illustration 74).*

Next, using the screw that I had epoxied into the safe's spindle to

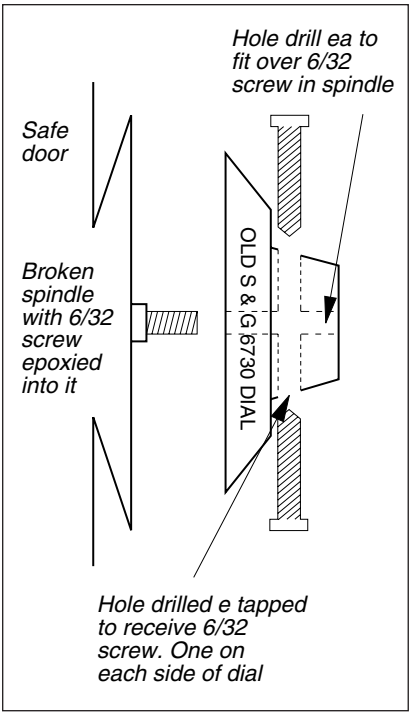

Hole drill ea to fit over 6/32 screw in spindle
Safe door
Broken spindle with 6/32 screw epoxied into it
OLD S & G 6730 DIAL
Hole drilled e tapped to receive 6/32 screw. One on each side of dial

Illustration 74.

manipulate the wheel pack, I determined the approximate location of the drop in. After cutting off the head of the screw in the spindle, I attached my custom-made emergency dial and secured it to the spindle "extension" by

tightening the two 6-32 screws on each side of the dial.

Using a Magic Marker to indicate the opening index (the dial ring had been mangled), I began dialing with the original combination and dial down five combinations. No luck! Then I started dialing combinations up from the original and got a drop in and lock-bolt retraction on my third try!

After that it was a simple matter of retracting the door bolts and installing a new S&G 6730 lock, dial and dial ring.

Johnny T. Long
E Mail

Editor's Note: Johnny showed his resourcefulness in "making do" with the materials he had at hand. Which jes' goes to show y'all that Murphy and Mother Nature don't always have the last laugh - even when they double team ya'!

Dial Protector

My customer had a wall safe in their furniture showroom that they would leave on day-lock. The problem was that customers, or more accurately their children could not resist giving the dial a spin as they passed by.

Since the safe couldn't be moved and management wanted to leave the safe unlocked during the day for easy access to those employees that needed it, they asked me to come up with a way to keep the dial from being spun by passers-by or shoppers.

My solution was to install a clear thermostat cover over the dial and dial ring. I simply cut a four-inch hole in the back of the thermostat cover, which was plastic and mounted it to the safe by drilling and tapping 6-32 holes for the mounting screws.

This worked well, and the customer was happy.

Ray Conner
Virginia

M.A.G. Safe Adaptation

We recently sold a Gardall - Model FL1337C - Double Door Depository safe. The customer requested that we install a LaGard 2200 Key Lock on the bottom door.

When we removed the dial ring, it became obvious that Gardall does not apply paint to that area of the door. Apparently, the lock is installed before the door is painted. Normally that would not create a problem, except, in this case. The unpainted area on the Gardall door was 3-3/4" in diameter, and the escutcheon plate for the LaGard 2200 was only 2" in diameter. Since the safe had to be delivered the next day, we did not have time to custom fabricate an escutcheon for the LaGard that would hide the unpainted area.

I hit upon the idea of using two cover plates from M.A.G. Engineering. I used an Adapter Plate (Part # 8860C) which Mag recommends for reducing the

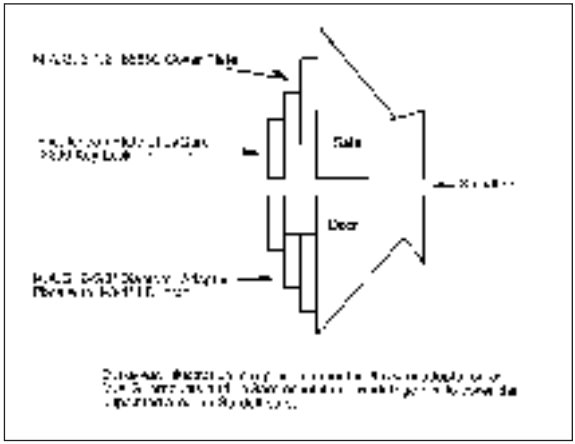


Illustration 75.

diameter of a crossbore, and a M.A.G Cover Plate (Part #8865C) which has a 3-1/2" diameter and is recommended for use when reducing the backset on a door from 2-3/4" to 2-1/8". The 3-1/2" diameter of the 8865C, covered the unpainted area nicely. The 8860C with it's 1-1/4" inside diameter hole, was small enough to allow the 2" escutcheon of the LaGard 2200 to cover it nicely.

Of course, I had to use longer 8-32 screws to hold the whole arrangement to the face of the safe's door, but as you can see from *Illustration 75*, it made a neat "stack," solving the problem which allowed us to deliver the safe in a timely manner.

Tim Fiorini,
Pennsylvania

Paper Transfer

To avoid unnecessary internal damage, some safes are best drilled away from their drop-in point which makes it necessary - using normal procedures - to transfer numbers after drilling the safe. Here's a simple way to transfer gates (not numbers) to the drop-in point.

First mark the position of the drip-in above the dial ring with a felt tip pen or scribe. After using whatever method you would customarily use to access the wheel pack, do the following:

Cut out a small disk of heavy paper or cardboard *(see Illustration 76)*. Cut a hole in the center and attach it to the spindle in such a manner that it will rotate with the spindle.

Use a pair of small Vise-Grip pliers or an emergency dial to turn the spindle.

Using direct sighting, an otoscope, borescope or flashlight, align the first gate with the scope hole that you drilled in the safe (it doesn't matter what the number is). When you bring the first gate into alignment with the hole, make a Roman Numeral "I" on the disk.

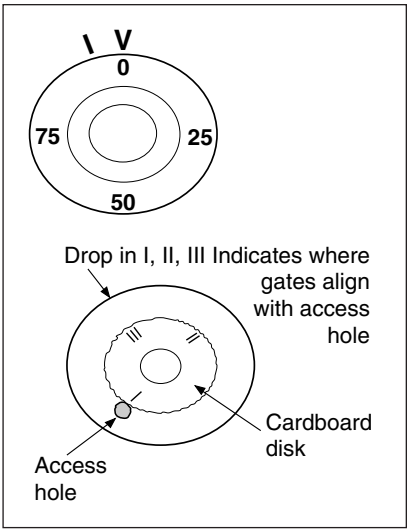


Illustration 76.

Bring the next gate in alignment with the scope hole and make the Roman numeral "II" at that point on the disk. Repeat the process with the third (or fourth) gate and mark it "III" or "IV" as necessary.

With all the gates "marked" on the disk over the spindle, all you have to do is "dial" the gates to the drop-in using the same dialing procedures you would use if you were actually dialing a numerical combination, except in this case you are dialing gates directly to the drop-in.

After dialing to the drop-in (depending on the type safe you are working on) just retract the bolt or turn the handle and open the safe.

R. W. Staples, CML
Washington

[Editor's Note: The foregoing tip just goes to prove that there is "always a way". For those of you that do not want to spend the time making your own transfer tool, Lockmasters recently started marketing a neat little set of transfer tools called the "Gallian Transfer

Tool". The set consists of four very thin plastic disks with small set screws to hold them to the spindle. By aligning each set screw with the gate, the set screws become your "numbers". After "marking" all the gates, simply transfer each set screw - in sequence - to the drop-in point. The set was developed by my friend Tom Gallian and, as I said, is marketed by Lockmasters for about $15. In a future issue of The National Locksmith, I'll show you Gallian's Transfer Tool in action along with some truly amazing drill bits. Don't dare miss it - y'all heah?]

Diebold Cover Tab Repair

I was called to service a Diebold round door safe with a tri-bolt arrangement and an S&G 6663 combination lock on it. The lock was malfunctioning, and when I removed the back cover from the door, we found that two of the three tabs that hold the 6663's cover plate on, had broken off. This allowed the cover plate to tip and prevent the lock from functioning properly.

Not having any idea where I might be able to obtain parts (If they were even available,) I decided to see if there was some practical way of effecting a repair, without resorting to long delays caused by a wild-goose chase for parts.

As you can see in *Illustration 64*, the lock cover plate has three tabs which set on the retainer screw posts. This also served as a guide posts for the locking cam plate on this safe head. In the illustration, the shaded areas on the tabs indicate the broken portion of the tabs.

I used a hacksaw laid horizontally to the broken tabs and cut a groove into the lockcase cover. I widened this groove to a width sufficient to accept the edge of a small washer.

As you can see in *Photograph 2,* the washer is large enough to keep the cam plate in position without rubbing the cam and preventing it from throwing or retracting the bolts. A liberal application of Lock-Tite, keeps the screws from loosening. The washer resting on top of the remaining portion of the broken tab inserted into the slot that I cut, securely holds the lock cover plate in position.

The repaired safe has been in service now for several months without showing any signs of problems or failure.

George Lazich,
Wisconsin

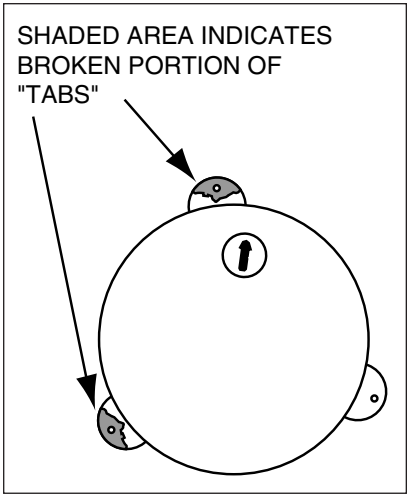


Illustration 64.

Photograph 2.

Change Key Hole Locator

I've seen a lot of locksmiths waste time trying to line up change key holes on a wheel pack they have just serviced. Here's the simplest way I have found to do it.

Take the back cover off the lock case and line the gates up visually. Now insert the proper change key, and slowly and gently (without turning the key and unlocking the wheels) rotate the entire wheel pack until the nose of the key drops into the hole in the case.

If you look at the back cover, the wheels should be in position to accept the change key once the back cover is put on.

Clarence Bennett, CST
Ohio

NOTES

Smoking Key

Trying to impression Ford an Chrysler locks late at night has been a problem for me. I discovered that if I used the parking lights on my van, the yellow light that they cast helped me clearly identify the marks.

If I have really trying key to impression, I use a magic marker to darken the blade of the key (remember "smoking" blanks?) and the marks really stand out.

Terry Suetter
Michigan

Master Pick

Here's an easy way I have found to pick open a Master #175 resettable combination padlock.

I made a pick from a piece of a 1/2" wide tape measure and ground it as shown in *Illustration 77.*

Illustration 77.

Holding the lock with the wheels facing you and the "175" to your right, set the first wheel between numbers and insert the tip of the pick in the lower right hand corner of the wheel opening.

Push in on the pick and you feel it hit the small wheel inside the lock, turn the wheel to the next position and push the pick again.

When you feel the pick go past the small inner wheel, you have either hit the notch (which is what you want to find) or the flat area on the inner wheel. To find out which, rotate the number wheel to the next position. If you hit the inner wheel, it's the notch that you felt. If you don't hit the inner wheel, it's the flat spot.

When you find the notch, let the number wheel gall to the next number and add three to that number. The total will be the correct number of that wheels combination. Do this to the other three wheels and the lock will open.

Al Bowman,
Missouri

Picking the Tibbe Lock

A recent newcomer on the automobile scene in Europe and other countries is the new Ford Mondeo. Because of a locking system that locks everything (doors, inside lock handles, boot, etc.), and since these newer car doors are heavily shielded and all rods have been replaced by cables, the car seems almost impenetrable in the event of a lock out.

However, the locks on these cars are made by Tibbe and by using the Tibbe lock pick set made by Souber Tools, you can gain entry to the car.

To successfully pick this lock, you have to gain tension on the number 4 disc (The lock is similar to the Abloy). There should be at least one #4 disc. Use the pick to move up and down the pack of six tumblers gently nudging the other discs into position After each time, go back to the #4 disc nudge it and see if the barrel is going to turn. If there is more then one #4 disc, nudge each in order.

As the other discs come closer to their position nudging the #4 discs in the lock with often cause the barrel to turn or cause the other discs to turn slightly until they fall into position

By using this method, we have, in actual fact, decreased the time involved to pick this lock. Seldom does it take more then ten minutes to do the job.

G. Watts
London

Editor's Note: Although the Tibbe Lock is found mostly in Europe and other parts of the world, it was used in the U.S. on the Ford Scorpio and I believe on some Jaguar models. Since The National Locksmith does have readers worldwide, I thought we'd pass this on to them. For U.S. locksmiths who want this pick, contact Mark Bates Associates at 606-858-0811.

Best Lock Pick

Picking Best 6-pin and 7-pin cylinders and Arrow 6-pin cylinders can be difficult. I have found what I believe to be the best pick to use for opening these locks. It is pick #J-6 from Lock Technology, Inc. Auto Pick Set #340.

I begin by placing a thin tension wrench at the bottom of the keyway and apply turning tension to the right (clockwise).

Insert the serpentine end of the pick all the way to the back of the cylinder, making sure that you have cleared the last pin. Hold the pick at an angle to match the keyway - not perpendicular to it. Now, rake the pins as usual.

If the cylinder does not yield, continue applying tension and turn the pick around to the diamond end. It may be necessary to reverse the pick more than once, but it works surprisingly well on these locks.

Always pick to the right. If the plug turns and it does not turn to the opening direction that will retract the latch or bolt, use your plug spinner to reverse direction.

Be sure to keep the pick at the proper angle, or it can become trapped when the plug turns.

James R. Asheraft
Michigan

Unseated Key Solution

Normally a locksmith who is competent at impressioning will look at a wafer lock with glee since wafer locks are usually the easiest locks to fit a first key to by impressioning. However, I want you to know that there are wafer locks that can cause you no end of frustration and undermine your confidence in your impressioning ability.

These type locks often have a deeper than normal wafer in the fifth or sixth position. Since that wafer is deeper it prevents the uncut key blank from completely entering the keyway and allowing the shoulder to rest against the shoulder stop in the lock. When that happens, you get good marks, but when you finish the key, it won't work the cylinder.

Most frequently, the difficulty arises when the locks have a nose and dust cover that prevents you seeing whether or not the shoulder has bottomed out. The problem arises when you don't realize that the blank is not all the way in the keyway. The only way to tell if it is is to sort of feel the depth of the key. I guess the easiest way to describe it is to say that the key feels like it is rocking on the tip instead of against the shoulder.

If you suspect this is what is defeating your efforts to impression a key for this particular wafer lock, try filing the usual matte finish; but on the ramp of the blank at the tip! Now insert the key and rock it to obtain marks. If the problem is a wafer stopping the uncut blank from bottoming out, you will see a mark about halfway down the ramp.

Begin filing on this mark. But! Instead of filing downward, file towards the bow of the key parallel with the bottom of the blade. As you file, the key will slide further into the lock and will attain the right

feel when the key is all the way in. At that point, go ahead with your normal impressioning procedure until the cylinder turns.

Tom Taylor, CPL
E-Mail

Slim Jim Sampler

I seldom use a Slim Jim for car openings anymore, but I do keep one in my bag for house openings. Here are some of the tricks I use when I run into difficult to pick door lock.

First, I make a complete walk-around inspection of the house to see what my options are. I look for outswing doors since you can often push those doors in against the rubber insulating seal to allow the deadlock on the latch to slip into the strike. Once that happens, you can often easily open the door with a penknife or small screwdriver. (I might add that I sell a lot of deadbolts when customers see how easily a latch can be loided.)

My next favorite point of entry is at sliding glass patio doors if the house has them. Often the homeowner sticks a piece of wood in the track to keep the door from being opened. That's where the Slim Jim comes in handy. Part the doors slightly with a car window wedge or large screwdriver and you can flip the stick out of the way.

On apartment doors that are inswing doors, I have used a sharp knife blade to part the door stop from the frame just enough to slip the Slim Jim in the crack. Again, by pulling hard on the door, the weather stripping will usually give enough to allow the deadlock to enter the strike and I can then jimmy the door open. Of course you have to repair any scarring or scrapping you might do to the door frame but that's easy enough.

Windows with the old-fashioned sash-type locks are also easy prey for my Slim Jim or a hacksaw blade. Just slide the tool between the rails of the windows and work the lock to the open position.

I really prefer to pick or impression a lock to get a customer in their home or apartment, but sometimes that is not practical. Then, I open the property in the most expedient and least destructive way possible.

And, as I said: these types of entry quickly points out to the homeowner the need for deadbolts, latchguards on outswing doors and locksmith installed patio door locks.

Chuck Donnelly
E-Mail

Ford Speed Impressioning

I have found a quick way to impression a Ford 5 pin lock. I think beginners as well as more experienced locksmiths will find this handy.

First, cut number two depths in all five spaces. Dress the cuts with a fine file and put the key in the lock.

Using a small pair of Vise-Grips clamped to the bow of the key, gently bump the key to the left and then to the right.

Remove the key and check for marks. Anywhere a mark shows, take that space down to a number four cut.. Re-insert key and turn with Vise-Grips. If necessary, increase turning pressure until key turns lock. Be careful not to break key.

When lock turns, remove blank and check for more marks. Dress those down with a file until the key turns easily and smoothly in the lock and you're done.

I have found that many one, two and three depths will pass on a two cut and many three, four and five depths will pass on a four cut.

John M. George,
California

[Editor's Note: I have encountered Ford locks where John's tip will work quickly and easily. However, I feel that I must caution anyone who tries John's tip to use a very light touch and do not use excessive force. I have known of Ford cylinders (especially the cast pot-metal ignition cylinders) that have literally been destroyed by an overly aggressive approach to impressioning. I can state unequivocally, that I have had to replace several Ford ignitions when I became a little over-enthusiastic while trying to impression the cylinders. On a strictly personal level, I prefer working with one-and-a-half, two-and-a-half, three-and-a-half and four-and-a-half depths. Whether or not that approach is for everyone, will be dictated by personal preference and whether they use a file, a code machine or a clipper to impression with. thanks for the tip, John!]

Soft Sided Impressioning Keys

On the older Ford ignition locks that use the Ilco 1167FD key blank (Star #HFD10) I often have a difficult time obtaining usable impressioning marks. To help overcome the problems I have had with these locks, I came up with this idea for a blank that would make impressioning much easier.

First, I code cut the blank on one side to all #1 cuts. Then I deepened each cut to a number five depth on my slotter! I do this in all five spaces. This gives me a blank that looks like the one in *Illustration 78.*

Using a stainless steel handle from an old pick, I lay the handle of the pick under the slotted Ford blank, clamp it there with Vise Grips and fill each cut full with silver solder. When the solder hardens, I file off any excess and smooth all the surfaces on the key blade. I insert the prepped blank in my Curtis Clipper (you can use a file or any code machine for that matter) and cut each space down to a number one depth. Since the solder is very soft, I have to use my file to "dress" the blank after each cut. I then insert the blank in the ignition and a few light twists and a gentle rocking motion and I bring the blank out and cut each space that has marked, and they mark very well. When I have a working key, I already have the cuts "set" on my Clipper, I cut the customer a new set of keys and send them on their way. It takes me about an hour to prep twenty of these blanks. I estimate those twenty blanks will save me some eighteen hours in impressioning time and a lot of ruined key blanks.

Raymond Conner, Jr., CRL
Virginia

[EDITOR'S NOTE: Thanks for a good tip, Ray. On almost the same day that I received your tip, I received LOCKMASTER'S 1996 Tool Catalog. On page 43, they have IMPRESSEZE Blanks which use an alloy material —like you used silver

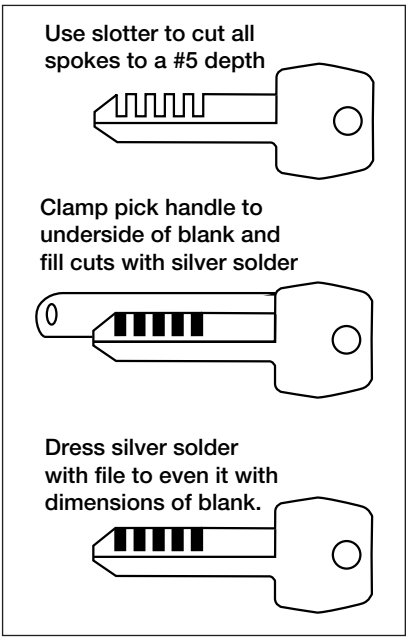

Use slotter to cut all spokes to a #5 depth
Clamp pick handle to underside of blank and fill cuts with silver solder
Dress silver solder with file to even it with dimensions of blank.

Illustration 78.

solder — that is supported by the milled key blank. These blanks from LOCKMASTER'S sell for $5.50 each. Even though LOCKMASTER'S does not list a blank for Ford, they show a Ford secondary blank in their promo photo on that page. Mark Miller, V.P. of Sales for LOCKMASTER'S told me that they would have a larger variety of these blanks available in the future.].

Make Impressioning Easier

Here's an idea that makes impressioning all types of locks easier.

First I use my 1200CM to cut a number one depth in all the spaces on the key. Next, I use the nylon brush on the machine to brush each blank down to a matte finish.

With the matte, or dull satin finish, on the key bank, I find it much easier to spot my "marks". After I bring each depth down, I run the blank under the brush again to expedite finding the next mark.

Arron Cornelius
Maine

NOTES

Modifying Key Machines

Convert Machine To DC

I wanted to convert my duplicating key machine to 12-volts to operate off my service truck's battery but didn't like the prices when I talked to my supplier.

Figuring that there had to be an economical answer to my problem, I went to the local junk yard and bought a starter off an old Toyota. Which, it turned out had more then enough torque to do the job.

There were two problems: First, the starter turned at too high an rpm. I solved that by using a larger pulley on the key machine. Second, the starter motor turned in the opposite direction than my cutter does. I solved that problem by using a round drive belt and crossing it (like an "X") between the starter pulley and the machine's pulley.

Now, I can duplicate keys without having to find an outlet to plug into every time. So far, I've cut about 300 keys with my new machine.

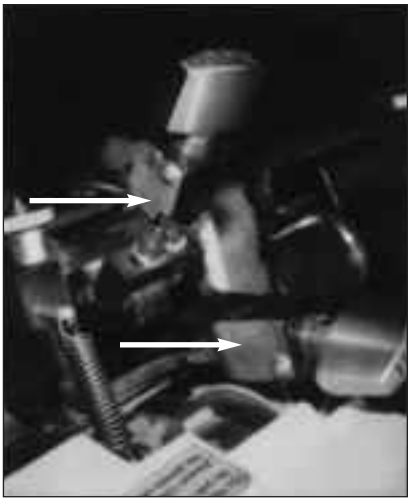
Charles Shackleford
Mississippi

Tip Stop and Shim

Like many of my fellow locksmiths, I cringe when a customer comes into the shop and wants me to duplicate a removable core key. Those keys seem to be the most difficult to get set right in the key vices of the machine, since the keys have no shoulder stop. Usually, I gauge them from the bottom with a screwdriver blade ... and pray!

Well, I think I just might have found the best alternative.

I took the top jaws off of my Ilco 017 duplicator and then drilled and tapped them for a 6x32 ma-chine screw. I made two flat steel plates and drilled a corresponding hole for the screw and remounted the jaws on the ma-chine *(see Photograph 5).*

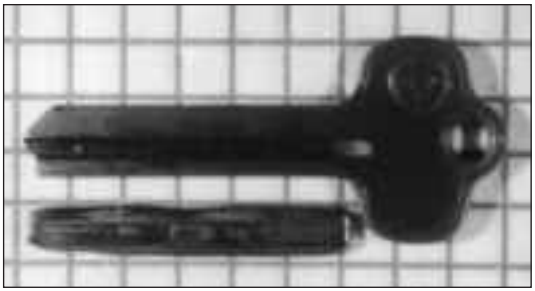


Photograph 5.

Now, when I have a run of IC core duplicates to make, I just loosen the screw, slide the plates into position and gauge the blanks with the underside notch on the blank against my new stop. It works like a charm every time. I have cut both control and operating keys with no problems.

When the need arises to make double sided duplicates, the adapter plates are simply swung up, out of the way, and locked in place. We've found that these stop plates also work well as a tip stop gauge for both regular and 10-Cut Ford keys !

Also, when cutting IC core keys, I've found a solution to keep certain keys from rolling in the key vise. Just take a piece of solder, lay it on a good flat surface and lay a flat piece of metal (a name or number stamp works well) strike the metal



Photograph 6.

with a hammer and flatten the piece of solder *(see Photograph 6).*

When you lay the flattened solder along side the blank, and tighten the jaws, the solder will conform to the shape of the grooves in the blank and make a perfect shim. I know it sounds too simple but, try it on a few of those blanks that roll and see for yourself.

William B. Newns, Sr.
Pennsylvania

Expanding HPC Punch Machine

After reading your article on the HPC 1200 Punch Machine (See The National Locksmith, May, 1995, page 39), I decided to order one. After it arrived, I began looking for ways to utilize the HPC 1200 as the only code machine that I would need on my van.

As stated in your article, true paracentric keys can't be punched on the 1200 due to key blank distortion. However, I found that if you need to generate a first key by code, simply punch out a key on an acceptable blank and duplicate that onto the proper blank.

For instance: You need a key for a Sargent "R" sectional keyway. Use a Jet DE8 (or equivalent), insert it from the left, use Jaw "A" and punch 1011. Using either the micrometer card or a card that you have made, punch out the key using Sargent depth and spaces. Now, just duplicate your guide key onto the proper blank.

I think that HPC should consider the possibility of developing a special key blank just for this purpose. It could greatly enhance the capabilities of their 1200 Punch Machine, which I think is just as great as you said it was in your article, Jake.

Jerry Weldin, CRL, RST
Kentucky

Slot Key Cutting

Having experienced difficulty cutting flat steel keys on the HPC 1200CM, I looked for an effective method of cutting those type keys on my 1200 using the Universal Micrometer Card #58. Here is what I have discovered to make the job go smoother.

1. Set the machine carriage at 0.800", plus one-half the width of the flat steel cutting wheel.

2. Insert the key in the vise jaws with the tip side of the bit of the key against the left side of the cutting wheel.

3. Make the cuts at settings of 0.800", minus the key cut spacings.

To facilitate the use of the 1200CM in cutting flat steel keys, I am forwarding a copy of this letter to HPC, Inc. and suggesting that they produce a Universal Micrometer card that has a Zero position at the 0.800" carriage position of the current Universal Micro-meter Card

Also, I believe that all depth markings below .142" on card number 58 and .103" on Card Number 59 should either be removed or printed in red since the current markings can cause the unwary locksmith to go beyond these limits and cut into the vise jaws of the machine.

Jack D. Boswell
Kentucky

Editor's Note: Jack, you have already received a response to your suggestions from Alan Goeke, VP of Operations at HPC. In his letter to you, he recognized the validity of most of your suggestions and told you about HPC's new CMRT for red tip gauging that eliminates time-consuming guess-work in slot cutting situations with HPC's 1200 CM. Alan further told you that HPC is currently developing a series of Code Cards for flat steel and safety deposit box keys that uses both a modified red tip gauge and a modified black horseshoe gauge supplied with the CMHT or CMRT cards. These new cards and tip gauges should have been available from your favorite supplier by the end of 1995.

Also, I would like to thank Alan Goeke at HPC for responding so quickly to suggestions like the one you sent to me in the form of a Technitip. Everyone out there should be aware that HPC and other manufacturers are extremely interested in receiving valid and constructive feed back from product users about ways to improve their products to everyone's benefit.

Saving The Shoulder

Code cutting single sided GM keys on my Belsaw 200 presented problems for me since, depending on the depth, the first cut would often destroy the shoulder of the key.

I solved this problem by making a set of depth keys for that frustrating first cut. I made these keys by using factory cut keys as patterns (you only need five keys for the five depths) and duplicating that first cut.

Now, when I have a problem key, I simply use the appropriate depth key and make the first cut on a duplicating machine and generate the rest of the code cuts in the usual manner on my 200.

Lewis C. Elkin,
Texas

Making Key Machine Replacement Drive Belt

I have a couple of key machines on my trucks that are set up with dual motors — 12 volt DC and 115 volt AC. The belts for these are small and I have a hard time trying to find them.

My solution was to purchase several feet of 3/8" clear tubing (you can get it at most hardware stores). I cut the tubing to the size I need, insert a piece of 16 gauge wire about 4" long that is covered with an epoxy-type glue. I let the glue dry for a short time and have the belts that I need. The wire is flexible enough not to cause problems when I run the machines.

John F. Alwine
North Carolina

[Editor's Note: Under similar circumstances I have found that Hoover vacuum cleaner belts will work. On occasion, I have used Singer sewing machine belts. Thanks for the tip John, I don't think tubing would have occurred to me.]

Key Machine Cover

This tip concerns plexiglass. I use it to cover the key machines to keep the filings confined to a smaller area and also to keep them from getting in my eyes.

I have three machines that I use plexiglass on; two Belsaws and one Ilco 2585. For my Belsaws I cut the plexiglass at 12~ x 18t and for the top 18~ x 12#.

The old way of putting it together was to get enough L-shaped corner braces, then drill small holes and use metal screws to hold it all together.

The new and easier way is to use a hot glue gun. Just line up one piece and run the gun along the joint.

I sure got a lot of comments on how nice it looks, but I really like it

because it keeps the metal chips from getting all over the place.

LeRoy Gramza
Manistee, MI

Accurate Adjustments

Recently I discovered a very accurate method of adjusting my Foley-Belsaw 200 key machine. The normal procedure for setting the proper depth, was to insert two blanks, push the carriage against the guide (with the micrometer set at zero degrees) and against the cuttcr. Then, rotating the cutter by handf adjust the setting as the cutter lightly scrapes the key.

Instead, I propose the following method. I took a standard continuity tester and hooked one lead to the frame of my machine. I then insulated the two blanks on the back and sides with scotch tape. I used two thicknesses (to avoid grounding out in the key vises). I hooked the other lead end to the blank opposite the cutter. I insulated the blank in the guide's vise solely to keep the blanks the same size. I zeroed the micrometer and pushed the carriage against the guide and cutter until the light came on. I then adjusted the machine so the light would go back off as soon as the micrometer passed .001 on the opposite side of zero degrees, pushing the key away from the cutter, thus breaking continuity.

To check my theory I cut a blank using a factory cut Schlage key as a sample. I then "miked" the cuts with a vernier within .001. I am sure this method can be adapted to work on any key machine.

Thomas A. Mazzone
Streamwood, IL

Easy Code Machine Check

Next to my key duplicator, I keep a Schlage cylinder pinned to 99999 with a key that is code cut to those depths. This specially pinned cylinder provides me with a fast and easy method of frequently checking the accuracy of my key machine without wasting any blanks.

It is especially helpful when duplicating large numbers of keys at a time for one customer. If your machine loses it's adjustment during this situation, you can wind up with a large number of miscuts in a very short time.

So, periodically, I grab a key out of my throw-a-way can and duplicate the "9" key. Then I try that key in my "9" cylinder. If it turns smoothly, then I know my machine is duplicating properly and I continue on with my customers keys.

If try the key and the key and it turns hard, then I know my duplicator is cutting high. If the key sticks, and then turns easily, I know the machine is cutting low. Regardless, the machine needs adjusting.

I also use this handy method for checking the spacing when I change cutters. If the key turns hard after setting the depth adjustment, I turn the plug about 90°, leave the key in place and, while holding the cylinder in my hand, I hit the top and bottom of the key bow on my vise a couple of times.

When I turn the key back to the removal position and take the blank out, I will either see impression marks centered in the cuts or up on the ramps. If the dimples are centered on the flats then the machine is just cutting high but the spacing is O.K. If the marks are on the ramps, then the spacing is off.

If you try this tip you might want to use test cylinders for the more popular locks that you are likely to come across in your area of the country.

Tom Taylor, CPL
E-Mail

Medeco Key Adjustment

When I cut Medeco keys on my

HPC 1200 CM, I find that I can get a smoother working key if I cut the keys just a slight bit deeper than the code card calls for *(see Illustration 82).*

As per the *illustration,* I cut the keys about 1/8" past the depth shown on the card which seems to allow the key to work smoother.

Phillip M. Loftus
New York

Editor's Note: I have experienced the same situation using my 1200 to cut Medeco keys. When cutting Schlage, Sargent or Russwin I don't seem to need to deepen the cut. Anyone out there have any ideas about this? If so, I'd sure like to hear from you.

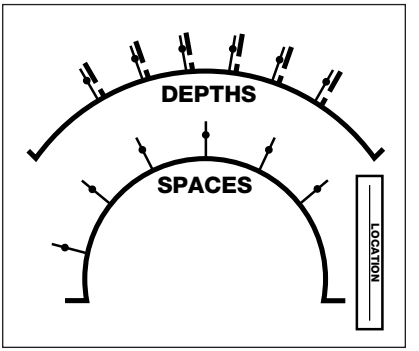


Illustration 82.

NOTES

Stripped Screw Hole Fix

Many times I have run into the problem where a standard screw for square face latches and strike plates will no longer work because the wood has been stripped out. Often, oversize screws have been used and these have also loosened.

My solution is to use 1-3/4" drywall screws. The heads are small enough not to stick out and the screws are long enough to get a bite in good solid wood. If the door is a composition type, I dip the screw in Elmer's glue before running it into the door with my drill.

Franklin Sykes
Georgia

Spray Tube Extender

I have found that occasionally the extension tubes that come with spray lubricants like WD-40 are not long enough to direct the spray where I want it (particularly in car door panels).

I found that if you use a piece of .047" diameter. spring rod, you can slide two of these extensions together, use a lighter to heat them until they bond, remove the wire and you have a longer spray extension.

Charlie Schwarzkopf
Vermont

Self Stick Labels

Today, its hard for a locksmith to try to compete with discount hardware stores and places like Wal-Mart who can sell padlocks for the same of a lower price then we can buy them for. I found a way to increase my padlock sales and at the same time instill more confidence in my customers, with out a great deal of expense.

For the cost of a small rubber stamp and a box of 1/2" x 3/4", self-stick labels. I place this label on every packaged padlock that I have in stock *(see Illustration 80)*.

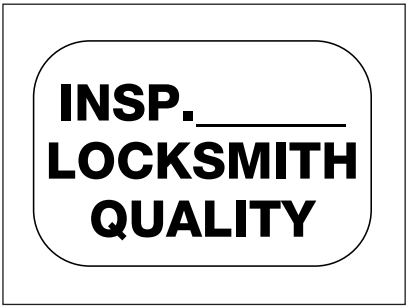


Illustration 80.

When the customer tells me they can get that lock for half price somewhere else, I tell them that might be true and pointing to my label "of quality assurance", I tell them that they're buying this lock from an accredited locksmith that can rekey all of their padlocks alike and replace or service the lock if it fails. I also let them know that the discount retailers won't do this.

This little label has helped me sell more customers because it gives them piece of mind.

Lee Whiteford,
California

Join Roadside Assistance

I found an article in the February, 1994 issue of Consumers Digest that told about the roadside assistance programs (particularly lost key replacement and lock out service) being offered by BMW, Chevrolet, Pontiac, Cadillac, Oldsmobile and Ford Motor Co. The article also mentioned that these services were available through AAA, Allstate and the Amoco Motor Club.

I thought that this might be a good source of business for locksmiths that wanted to contacted these companies.

Len Wagner
Illinois

Easy To Use Map

Sometimes you have to use a street map. At 2 AM the street names are awfully small and hard to read by a flashlights feeble light.

So, I cut a street map into sections and went to Kinko's and enlarged each section to fit an 8-1/2x11 page plastic page protector. I indexed each section by using the existing index marks. I put the map index in the front of my notebook. I put the section index locators on the page tabs.

Now, all I have to do to look up the street is locate the index, go to the proper page tab and find the street! It's much easier - even in the daytime!

I also photocopy the motel and apartment pages of the phone book and put these copies in my notebook, I try to obtain maps of apartment complexes and local schools and institutions. I keep this handy reference next to my seat.

Steve Stanhope
Texas

Paper Clip Key Shim

When I have a key that will not seat properly in the vise of my duplicator because of the milling pattern on the blank, I use a Jumbo type paper clip to keep it from tipping.

Simply straighten one end of the paper clip and file the cut end to eliminate any burrs that may be on the clip from the manufacturing process, place the straightened leg above or below the key as necessary and tighten down the machine's vise to securely lock in the most difficult key.

The other end of the jumbo paper clip makes a convenient handle to grab your shim by. This tool is also great for pushing in retainers on older GM and Ford locks and as a multi-purpose poke tool.

Lee Whiteford
California

Cold Weather Clip Warmer

I think that anyone who works on automotive locks in very cold weather should carry a blow-type hair dryer in their truck.

When the temperature is well below freezing, the plastic clips used to hold lock linkages in place become brittle and can break under very little pressure when you need to remove them.

I use the hair dryer to warm these clips up before trying to pry them loose. It works very well.

John Carty
Massachusetts

Directional Lube Tube

The plastic tube that comes with aerosol spray lubricants is fine for spraying lubricant horizontally into the keyway of a lock. I modified my tube to spray in an upward direction by cementing a hypodermic needle into the end of the tube and then bending the needle to a slight angle with a pair of pliers.

By spraying the lubricant upwards to the top springs and pins, I feel the lock is better lubricated.

Walt Thompson
Georgia

Pinning Light Fixture

I have found a very simple solution for the sometimes annoying and time consuming job of loading top pins and springs in lock cylinders.

Using a piece of scrap 2"x4"

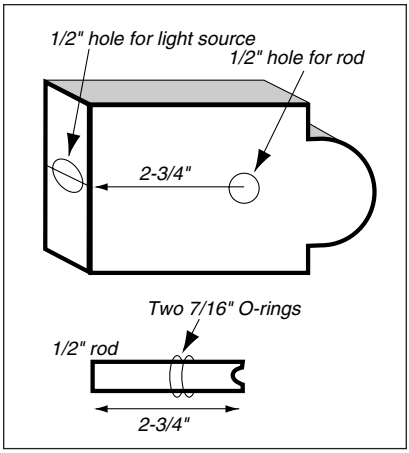


Illustration 81.

lumber 4" or 5" long, measure 2-3/4" from the end of the piece, along the center line, and drill a 1/ 2" hole, 1" deep in the piece of 2"x4" *(see Illustration 81).*

In the end (or butt) of the board, drill another 1/2" hole at center line lengthwise through the board until it intersects with the first hole that you drilled.

Next, you need to obtain a length of new 1/2" fluorescent Lucite rod. This material can be purchased from your local plastics supplier. The company I bought mine from had it in red, orange and green. Either color will work great!

Now cut a piece of the Lucite rod 2-3/4" long. A hacksaw will work just fine. File a notch in the top of the rod to accommodate the spring and top pin. Glue the rod in the center hole with a glue gun or any plastic-to-wood

Obtain two 7/16" O-rings and place over the rod. You'll also need a MINI-MAG "Solitaire" flashlight. That's it! A simple tool for quickly loading top springs and pins! Here's how it works:

Insert the MINI-MAG (or a penlight, flex light, etc.) in the 1/2" hole in the end of the board. You may have to increase the size of your hole by about .005" if you use

Photograph 7.

the MINI-MAG. Just "wallow" your 1/2" drill a little so that the light fits snugly but can be removed or inserted easily.

When you turn the light on and insert it in the end of the board, the light is transferred up the fluorescent tube and really lights up the inside of the cylinder *(see Photograph 7).* During the day, you don't need the light. Why? Since the rod is fluorescent, daylight striking the rod from beneath the cylinder will travel up the Lucite rod and illuminate the inside of the cylinder enough to easily see the pin chambers!

Now, remove the plug from any lock cylinder, dump the top springs and pins and using the two O-rings to support the cylinder, place the cylinder over the Lucite rod, and bring the notch in the rod to the first top chamber to be pinned. Insert the proper spring and pin then, push the cylinder down on the rod to the next chamber and repeat the process.

When you've finished loading all the chambers turn the cylinder 1/4 of a turn, place a properly pinned plug in position and slide the cylinder off the Lucite rod and onto the plug.

Or, you can turn the cylinder 1/4 turn and use a second follower to remove the cylinder from the Lucite rod and then insert the plug. Either way, the lighted rod and block arrangement makes top pinning much easier for me.

Dennis Harmon
Colorado

Editors Note: Dennis sent me one of his pinning blocks, and I want to tell y'all that I was truly impressed by it. I wear bifocals now, and it's harder for me to see down a cylinder to re-pin the top chambers. Dennis' tool made that job a snap! Photograph two is a view of the inside of a lock cylinder lighted by Dennis' tool. Y'all really should make one for your bench and van since this tool allows you to control the cylinder easily with one hand while loading the top chambers.

Shim Container

Need a really compact storage container for your curved shims? Try using the little plastic box that is used to package refills for mechanical lead pencils such as the Pentel 0.5.

They take up a lot less room in your tool box than the containers the shims come in.

Les Brocih,
E-Mail

EZ Knee Protectors

Here's a tip for helping to save your knees.

I often install several Schlage Rhodes locks at a time in new buildings. This requires me to be on my knees for a good part of the day. Needless to say, my knees do get sore.

I've found that the top foam packing material that protects the Rhodes lock during transport makes a great disposable kneepad.

Jeff Matteson
E-Mail

Screw Removal

What to do about the screw that refuses to come out? Buy left handed drill bits!

When a screw just won't come out, chuck up a left-handed bit in your drill motor, reverse the drill direction and watch most of these difficult screws come right out.

For the occasional really stubborn screw, you have drilled a hole which can be tapped to remove the screw or use an Easy Out on it.

Ralph Johnson,
E-Mail

Public Broadcast

Many locksmiths use cellular and cordless telephones today. These phones operate just like a radio transmitter and receiver. They send and receive signals. The problem is that anyone that has a compatible receiver (like a Police Scanner) can listen in on your conversations.

So, when you conduct any conversation over these phones do so as if a third party is listening in. Don't discuss confidential information, give out credit card or bank account numbers or privileged business information.

Treat these conversations as if they were being broadcast over your favorite radio station.

David Weaver,
Alabama

Space Indexing

If you don't have a code machine or space and depth keys handy, here's how you can determine the spacing for a key that you have to impression or generate an original key.

Use "White Out" to coat the top edge of the key blank. Then insert the blank in the plug and using a paper clip, scratch awl or dental tool insert the tool in the chamber and rotate it. This will scrape away the

white out and leave a very clear mark at the proper space.

These marks are easy to see even at night and help you to generate the key you need.

Charles Osborne
Virginia

Golf Tee Hole Filler

Golf tees make excellent hole fillers when trying to realign strikes of fill in wallowed out holes in door jambs.

Just gently hammer one into the hole, cut off flush, drill a small pilot hole in the proper location and insert the new screw. It's held tightly and firmly in place.

Juanita Ramsey
Texas

Silicone Keys

Try using silicon cloth (which you can obtain in sporting goods stores) to wipe off your keys after cutting. This will put a small amount of silicon lubricant of the key blade.

That will make it easier to insert the key into the keyway and saves a little wear and tear from abrasion.

Ed. Steedle
New York

Detex Battery Holder

When installing Detex units that have the battery on the bottom (You know, the big heavy batteries that always fall out when you remove the cover), just put a large, heavy-duty rubber band around the battery and the plastic tray. This keeps the battery from falling out and tearing the wiring loose or dropping on your foot. If your customer changes their own batteries, they'll appreciate this modification too!

George Henderson
E Mail

Key Code Keeper

Time is money and here's a tip that has saved me lots of time and made me plenty of money.

When I'm called out to generate keys for a car, I record the codes (using my own unique coding for each vehicle) in my 128K organizer. I'm amazed at how frequently, I am called to generate keys for cars that I have previously made keys for.

At any rate, the first thing I do is to check for my code on that particular car. If it's in my organizer, I simply clip a new set of keys and am on my way.

Tony Gross
Canada

Simple File Case

It's frustrating to carry expensive impressioning files in your tool box and have them wear out prematurely because their rubbing against each other and various tools in your tool box. I have found a simple, neat and cheap solution to the problem. I use Mr. Twister bits and those bits come in a plastic tube that can handily protect 6" impressioning file. The tubes that contain 8" fluted bits also work well for 6" files.

So, if you use carbide bits for safe work, don't throw the sleeves away that the bits come in. Instead, save them and use them to save your files.

Don Shiles
Maryland

Run Like A Deere

When I was called to assist the owner of John Deere equipment, I found that I did not have a "Deere" blank with a deer emblem on it What I did have was an RA-4 which fits the old American Motors vehicles.

I had to modify the blank as you can see in *Illustration 84* to make it work in the Deere, but now the Deere runs like a Deere should - even without the deer emblem!

Len Wagner
Illinois

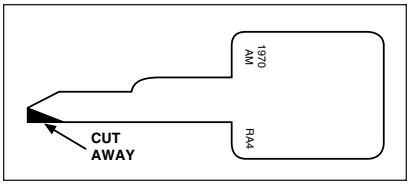


Illustration 84.

Muffin Tin Order

Buy several muffin tins and mark a number on each hole. Then, when you disassemble an unfamiliar lock, put the pieces in the tins in the order you remove them from the lock.

To reassemble the lock, simply reverse the order and you will not forget any pieces.

This technique can save time (even on familiar work) and it prevents screw and pins from rolling off the bench. If your work is interrupted by a priority job, you can move the tins to a shelf and your bench is clear for action!

Jeff Boone
Missouri

Easy Card Dispenser

Here's a little trick that I use to help get my name out to the public. All it takes to make this advertising tool is some business cards and a couple of cassette tape cases, some vinyl stick-on letters and a piece of double-faced tape.

I attach these dispensers to the re-ar window of my service vehicle. Whenever I am in a shopping center or curbside doing work for a customer, I flip the top of the cassette case down so folks can take one of my cards. With the stick-on letters saying: "Take One" over the holder, people do.

When I'm finished working and am ready to hit the road, I just close the dispenser and I'm on my way. Several customers have told me they called me because they saw my card display at a shopping mall or grocery store.

AC/DC Motor

A blower motor from an under-the-dash air conditioner from a junked auto-mobile makes an excellent DC motor for a Foley Belsaw 200 machine. I got one for my machine for just two bucks! Of course, I had to take it out, but it was worth it.

I hooked it up in tandem with the regular motor on my Foley machine. Now I can use the AC motor if I'm close to an outlet, or the DC motor if I'm not.

James Mortimer
Iowa

Hide A Key

A local church contacted me about putting a lock box on the outside of the church so a dozen or so of the deacons could have access to the church's master key.

For some reason, the powers-that-be did not want to issue master keys to each deacon and yet wanted them to have ready access to one. Consequently, they asked me about installing a lock box - like realtors use - on the outside of the church.

I advised them that a lock box such as the one they were contemplating using could easily be broken into and I recommended that they consider a small floor safe that was modified to withstand the elements. They rejected that idea because of budget constraints and wanted to know if I could find them an alternative answer to their problem that would not be too expensive.

So, I came up with this simple "Poor Man's" outdoor floor safe that gave them more security then a lock box and was less expensive then a standard floor safe would be. As it turned out, it will probably give fewer problems over the years then either of the others would, since this safe is constructed of some inexpensive pipe, threaded cap, a pipe flange, a couple of lag bolts and

a Master Pro Series Padlock and a couple of hundred pounds of concrete.

We chose, as a site for the safe, a corner wall that was sheltered from the most direct weather, dug a hole and installed my poor man's safe. *Illustration 86* shows how I used a 2' length of 8" pipe, etc. to make this special outdoor Key Keeper.

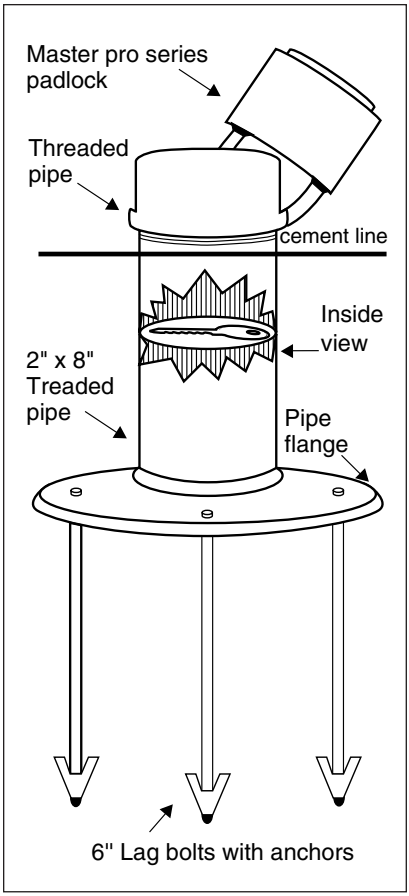


Illustration 86.

The nice thing about using pipe, etc. to construct this unit is that a crook looking for a way into the church could easily mistake my Poor Man's safe for a fuel-oil filler tube, a meter of some sort or any of several utilitarian plumbing, electrical or filler tubes. Best of all, the church got what it wanted a secure lock box containing a master key to the premises!

Gary Tsao
California

Editor's Note: Gary's tip shows a lot of initiative and ingenuity. Going that extra little bit to help a customer solve a problem like Gary did, is what turns occasional customers in to long-term customers. By the way, Gary, thanks for the excellent and clear drawings!

Sticker Ad

As you know, routine locksmithing frequently involves repinning lock cylinders so the old key will no longer work. Whether it's new tenants in an apartment, lost keys for a home or business or a simple rekey because of an employee change-over, I have found using a small company label's very helpful - in a number of ways.

If I have a large job involving numerous cylinders to be rekeyed or master-keyed, I stick one of my label on the face of the lock or cylinder as each one is rekeyed. That helps me keep track of my completed work.

On smaller jobs, or apartments, it acts as a reminder of which cylinders I have re-pinned, and it gives new tenants a sense of security knowing that their apartment locks have been recently changed. The label also acts as a prompt to those customers just in case they need other work done.

In addition, I find these little labels great advertising!

Steve Wade
Illinois

Bumper Guard

Whenever I am called to rekey a house, I look at all of the outbuildings and gates, as well as the garage. While rekeying the house, I let the customer know that

I can rekey all the gates, etc., to the same key if they would like. I also point out that if the property needs rekeying later, it can be done without the necessity of purchasing new padlocks, etc., for the outbuildings and gates since all of the cylinders would be on the same keyway.

I find that the majority of folks opt to have everything rekeyed since it means that they will have fewer keys to keep track of. And, this is also an opportunity for me to sell padlocks for the gates, etc.

Another area that I check out is the wall behind the doors in the home to see if the inside knob has been banging against the wall and leaving an indentation. I am usually able to sell the homeowner, realtor or property manager "Door Bumper Wall Protector Cover Plates" from Ultra Hardware. These plates stick to the wall over the hole or behind the impact point of the knob and prevent further damage to the walls.

These protectors sell on-site for $5 each, installed. I buy them from Ultra for 75¢ each.

Property owners, property managers, realtors and homeowners readily know that it will cost more than $5 to repair a hole in the wall. Catering to your customer's needs with the right product, at the right time and the right price is a tip that's sure to make you money.

Lee Whiteford
California

Suitcase Key Comparison

This should be helpful to the locksmith that is called upon to duplicate or originate keys for the popular Seward and Everlite America trunks and foot lockers.

Although not identical to the original keys in every respect and dimension, the Ilco T-44 will properly operate both brands of trunks and foot lockers since both have the same style of simple warded lock.

Peter Schifferli,
New York

A Hot Solution

During the winter months, I receive a lot of calls from customers with frozen locks on their cars. To solve the problem, I keep a 7.5 oz. can of WD-40 in the truck and use a 12-volt baby bottle warmer to heat the WD-40.

The bottle warmer plugs into my cigarette lighter and on my way to the "lockout," I plug the warmer in. Usually, by the time I arrive at the customer's location, the can is warmed up. When the warmer WD-40 is sprayed into the lock, it thaws the ice bound wafers or pins almost instantly, while lubricating the lock at the same time.

You can purchase a baby bottle warmer in the infants section of most department stores for about $15.00.

WD-40 alone will generally free up the lock since it will displace the moisture that caused the lock to freeze, but when the lubricant is warmed, it works almost instantly and is practically guaranteed.

Stephen J. Rogacki
New Jersey

Salvage Yard Treasures

After completing some auto lock work for a local salvage yard, I took the opportunity to do a "little looking" around the yard. I came across several old ambulance bodies laying in one corner and I began looking for anything that I might be able to use in my service van.

Scrounging around inside one of the bodies, I opened a compartment door and found a 1,000 watt inverter! After talking to the owner of the salvage yard, we agreed that the work I had done that day (about $100. worth) would pay for the inverter.

I pulled the inverter, tested it and installed it in my service van. It's a good, economical power source.

If you are just starting out or are looking to save money on equipment, your local salvage yards are not only a good source for needed parts and the occasional service job, but can, on occasion, provide some needed piece of equipment at a good price!

So the next time you're in the local "junk" yard, do a little scrounging around - it could be time well spent.

Joe Higgs,
N. Carolina

ID Please

I have been using this "ID" *(see Illustration 87)* card for about four years now. Wearing it with a photo in a pocket badge holder, gives the bearer credibility with their prospective customers.

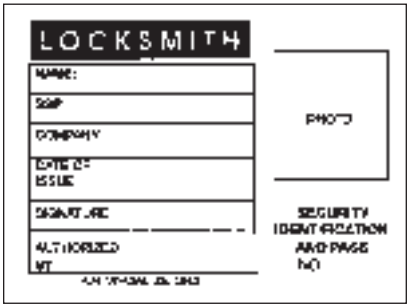


Illustration 87.

Any "Quick-Print" shop can run you off any quantity you might need for yourself or other employees.

I think this "ID" will be even more helpful since Illinois recently passed a Locksmith License Law.

Rodger Long,
Illinois

Electronic Storage

Each month I enter the different Technitips published in The National Locksmith in my computer. I enter the tips on a spreadsheet divided into categories that I find helpful such as: Tools, Safes, Door Hardware, Auto Access, etc. I then list the month that the tip (or article) appeared along with the page number.

Whenever I have a situation or come across an item I'm not familiar with-or just plain frustrated with, - I can usually find the answer in my computer.

Many times this has come in handy when it comes to opening a specific lock that someone has already spent time and effort to overcome.

Carol Oar
Oregon

A Ceiling Organizer

I have found a solution to the problem of where to store opening tools so they would be accessible when you need them and not tangled and stuck together like a mound of cold spaghetti. The first thing I learned was never to put those tools inside of anything! I tried the PVC pipe and various types of cases without any luck. After trying nearly everything including a shadow board (but where do you put that?) I think I hit upon the simplest solution.

My van has a hardboard ceiling. I decided that I would try mounting the tools there. The problem was what to use to hold them securely in place and yet allow me to quickly grab the right tool when I needed it.

What I did was to punch holes in the ceiling and use the little white plastic wall board anchors (the blue "lag" type or Molly type won't work). The small ones cost about .31¢ each and take a #6 screw which I used to attach a small Bull Dog clip.

The trick is to use the natural curve of the van's ceiling to keep

the tool firmly in place. I installed the clip to hold the tool at its center point. Since the length of the tool requires me to "push" the tool into the clip with the ends of the tool resting against the ceiling, the resulting "bow" of the tool keeps it firmly in place.

True, it required a certain amount of experimenting and "jiggling" to get everything in place just where I wanted it, but now each tool is installed above my heard, out of the way and easily accessible when I need it.

Chuck Michael,
Texas

White It Out

I have used many methods for locating strike holes, but the best that I have found is White Out (Liquid Paper). The water based type seems to work the best as it does not dry too fast.

Just paint some on the end of the bolt, close the door and throw the bolt against the jamb. Hold it for a few seconds and retract the bolt. It leaves a nice clear mark where you need to drill the strike hole.

This works really well on dark woods and primered metal jambs, and it takes up very little room in my already over-loaded tool box.

Richard Cybrynski
N. Carolina

The Expanding Door Syndrome

I'm a new locksmith and don't know if this will help some of the guys and gals that have been locksmithing for a while, but it might help another novice like myself.

The first big job I was involved in was rekeying a new restaurant (still under construction) and installing a Simplex Unican L-1000 on the back door of the kitchen. The door was metal and this was the first and only Simplex I had installed. Two days later the customer called me to tell me the contractor could not get the lock to work and resorted to prying the door open to get in (no key bypass on this one). That, of course, ruined the latch.

I drove over to the next city and picked up a latch from a supplier there and installed it on the door. I tried the combination and everything worked fine. The next day, the customer called and said they couldn't get the door open from the inside or the outside. I asked them not to do anything to the door until I got there and headed to the restaurant.

Sure enough I could not get the latch to retract after entering the combination. And from what I could see of the latch, it did not appear that the anti-friction pin or deadlatch pin had slipped into the hole in the strike. I went inside and tried the inside lever. No luck there either.

Inside, two things struck me. One, when I walked towards the door, I was nearly blinded by the sun coming through the security window. And, two, when I pushed against the door to try to force it open, it was really hot! You got it! The door faced due East with nothing to protect it from the morning sun. As the sun rose, it heated the metal door causing it to expand, which bound the latch. (It was a tight door anyway.)

I went outside, used the customers hose to spray cold water on the door, entered the combination and opened the door. The customer was impressed and I haven't had to go back to service the Simplex since. Now, as a matter of course, I tell customers with East-facing metal doors that they could have a binding problem on hot, sunny days.

James Whitman
Kansas

Drillers Hand-book

There's a book available from a company called Lindsey Publications (P. O. Box 538, Bradley, IL 60915-0538. Telephone 815-935-5353) called "The Drillers Handbook". This publication sells for $3.95 and tells you everything you ever wanted to know about grinding and sharpening bits.

It's a gem of a book that every shop, in my opinion, cannot afford to be without.

C. J. O'Donnell, RL
California

[Editor's Note: Lindsey Publications offers a free catalog of their publications to anyone interested. Just drop them a line at the above address and ask them to send you one.]

Homemade Work Light

A good way to light up your service vehicle and/or the vehicle you are working on in the field is with a trouble light using a 12 volt light bulb. You can buy different wattage light bulbs that fit in standard 110 volt sockets or fixtures for less than five dollars at most auto parts or hardware stores.

For my van I found an old goose neck desk lamp, cut the 110 volt plug off and wired it to the dome light so when I open the door my van lights up 10 times brighter than the dome light.

I also have a plastic trouble light with a cigarette lighter plug. When I am working on an ignition in a car I can plug it in their cigarette lighter socket or if theirs doesn't work I use mine in my vehicle with a long wire to reach. You can also use alligator clamps and hook directly to the battery of the car. I have used the same 12 volt light bulb for almost 10 years of locksmithing.

Caution: These light bulbs look exactly like 110 volt light bulbs and should be marked (12 volts only). They are not marked clearly and boldly originally.

Charles Frazer
California

NOTES

Section 2

Automotive Security

1994-95 Honda Accord, Part 1

By Michael Hyde

This month we take a look at the newest version of the Honda Accord *(see Photograph 1)*. This model uses a new type of ignition lock assembly never seen before on a Honda. All the locks, except the ignition, still have a code on them including the glove box lock.

Opening the car is straight forward as it has vertical linkage. I used an "Under-The-Button" tool that, with a little probing, I was able to raise the button.

1. The 1995 Honda Accord.

2. This column uses a two piece clamshell shroud, held together by six screws.

Ignition Lock

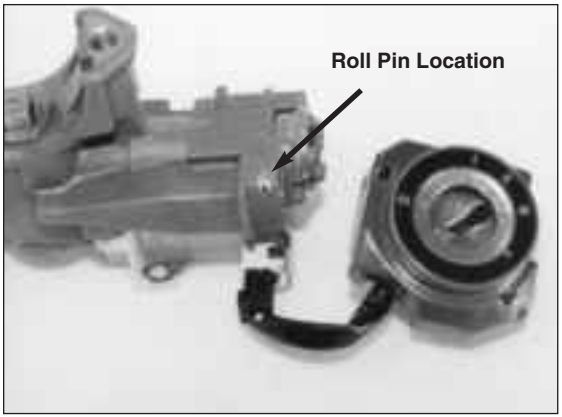
The ignition lock can be accessed by removing the plastic "clam-shell" around the column. First you should disconnect the battery, as a precaution, although removal of the airbag and steering wheel is not necessary on this model. The clam-shell is held together with six Phillips head screws *(see Photograph 2)*.

This type of ignition lock has a new design and face. Unlike older versions, the whole ignition assembly has to be removed from the column to be re-coded or serviced. The lock assembly is fastened to the column by two shear head bolts found at the top of the column *(see Photograph 3)*.

Once the shear head bolts are removed the lock slides away from the column easily just be mindful of the column wiring. The lock assembly wiring unsnaps from the lock.

The lock face plate has to removed to service this lock. There are two tension pins, one on each side of the lock, that

3. Two shear head bolts hold this new style ignition to the column.

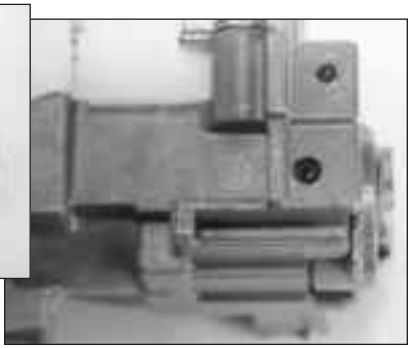


4. Remove the two pins that hold the facecap to the lock.

hold the face plate on. Drill a 7/64" hole next to the pins and pry them out. Once the pins have been removed the lock face plate slides right off. The wires attached to the face plate simply unsnap from the connector. The face place contains the buzzer switch and the shift interlock microswitch *(see Photograph 4).*

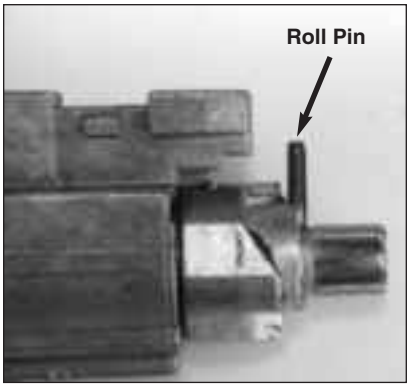
Now that the face plate has been removed there is still one tension pin holding the lock cylinder to the housing. The pin is easily removed (I used a broken key extractor to remove the pin.). After you have removed the pin the cylinder will slide right out *(see Photograph 5).*

The buzzer arm is held in place by a plastic fastener. It is best to temporarily remove it so as not to damage it while servicing the cylinder.



5. Now remove the roll pin that holds the lock cylinder in place.

The cylinder plug is held to the cylinder housing by a tailpiece with one tension pin next to it. Tap the pin out from either side, to remove it *(see Photograph 6)*. The lock plug now slides out the front of the cylinder housing. The ignition plug contains all eight tumblers. The whole assembly in it's disassembled state is pictured in *Photograph 7.*



6. Remove the roll pin from the plug's tailpiece.

7. The entire disassembled ignition.

8. Three hidden screws and eight clips hold the door panel on. The screws are located (A) by the inside release lever, (B) the door pull cavity, and (C) under a small trim cap near the front of the trim panel.

Door Locks

The door lock cylinder is an integral part of the outside door handle. To remove the door cylinder you must remove the door panel. The panel is attached to the door with three Phillips head screws and eight push-in plastic clips.

The first screw is hidden behind a trim piece on the inside handle release. The second screw is located in the door pull cavity. The third screw is located under a trim piece on the upper forward section of the door *(see Photograph 8).*

Gently pull outward on the lower section of the panel to unsnap the plastic clips. Once you have removed the panel, pull back the plastic liner and insert a 10mm socket into the access holes to remove the two bolts that hold the outside handle to the door *(see Photograph 9)*. The tailpiece on these locks are plastic and some care should be taken to remove the linkage rods from it. Now that the handle bolts have been removed you can push outward on the handle and remove the lock cylinder by sliding the wire retaining clip to the side.

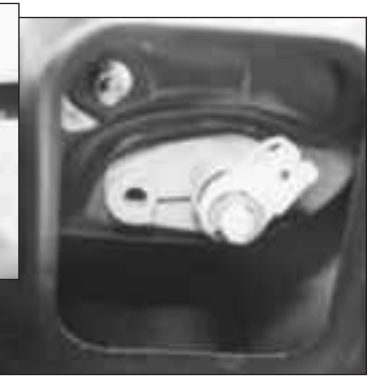
The door lock cylinder is one of the easiest to service. Remove the "C" clip from the back end of the lock and the cylinder plug will slide right out. No face cap needed. The cylinder contains seven tumblers in positions 1 through 7. There are six depths. The door cylinders are available from Auto Security Products *(see Photograph 10).*

Trunk Lock

The trunk lock on this car is an easy one to service. Open the trunk and remove the one 10mm bolt holding the lock to

9. The handle is held to the door via two 10mm bolts. Remove them and slide the handle out the front.

10. The disassembled door lock.



11. The trunk lock is actually part of the deck lid. Simply remove the linkage rod and 10mm bolt to remove it.

12. The face cap on this lock can be removed but must not be damaged.

13. The disassembled trunk lock.

the deck lid. Disconnect the linkage rod. Rotate the lock until it slides out of the deck lid *(see Photograph 11).*

To disassemble the trunk lock it is necessary to slide off the face cap *(see Photograph 12).* The face cap must be re-used, use a small flat bladed screw-driver to wedge the bottom edge of the cap off the lock. Next remove the "C" clip off the back end of the cylinder plug and slide off the tailpiece. The cylinder plug will now slide out the front of the housing. The trunk lock contains seven tumblers in positions 1 through 7. There are six depths *(see Photograph 13).*

Next month we'll cover the glove box and accessory locks as well as key generation methods.

1994-95 Honda Accord, Part 2

By Michael Hyde

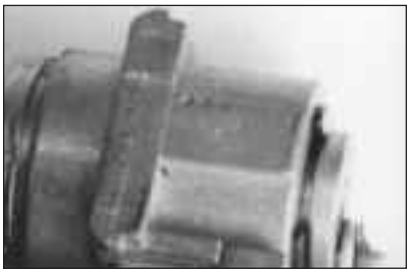
Last month we covered the ignition, door and trunk lock service on the 1994 and '95 Accord. This month we finish with the accessory lock service.

The glove box lock on this vehicle is an easy lock to service. The lock is removed by unscrewing the two Phillips head screws that hold it in the door *(see Photograph 1)*.

The key code is stamped on all the locks except the ignition. *Photograph 2* shows the glove box lock with the code stamped on it. As can be seen, more than one number is present. This is typical. Often the code is incorporated into a longer number. In any case, the last four numbers is the correct code. In some instances, the plastic trim piece may cover the last digit of the code. Make sure you see all the code.

To remove the cylinder plug from the glove box lock it is necessary to snap off the colored plastic trim around the front section of the cylinder plug. Next remove the "C"

1. The glove box is easily serviced after removing the two Phillips head screws that hold it in the door.



2. The code number is plainly stamped on the lock's body. In most cases this is the easiest lock from which to retrieve a key code.

3. The snap ring and the small clip holding the pawl on must gently be removed.

4. The glove box lock plug.

clip on the back of the plug. Next remove the linkage retainer, these retainers can be somewhat difficult to remove. Use a small flat bladed screwdriver to gently wedge the retainer up over the post *(see Photograph 3).*

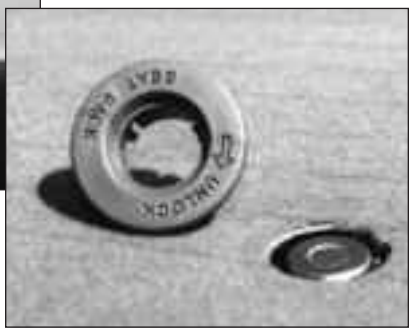
The glove box cylinder plug contains five tumblers in positions 1 through 5, there are six depths *(see Photograph 4).*

The rear seatback lock controls whether or not the rear seats can be folded forward. The main purpose of this lock is to not allow access to the trunk from the passenger compartment without having to use the master key. To service this lock, first remove the trim piece that encircles the lock *(see Photograph 5).*

From inside the trunk compartment we can see the underside section of the lock assembly. Remove the cover, it is held in place by a Phillips head screw. Disconnect the linkage rod attached to the lock *(see Photograph 6).*

Next, lift up on the rear deck liner and remove the two 10mm bolts that secure the lock in place *(see Photograph 7).*

Before servicing this lock it must be removed from the steel support frame that it is placed in. To do so, wedge a



5. The seatback lock controls the folding down of the rear seat. To remove, begin by lifting out the plastic trim ring that surrounds the lock.

6. From inside the trunk, remove the seatback lock cover and disconnect the linkage.

7. Next, lift the rear deck liner and remove the two 10mm bolts that hold the lock in place.

8. To remove the seatback lock from the steel frame, gently wedge a screw driver between the back of the lock and the pawl.

9. The disassembled seatback lock.

10. Lift the small cover to expose a Phillips head screw. Remove the screw and the cover can be removed, giving access to the trunk/gas cap lock.

screw driver between the pawl and the rear section of the lock, the lock will slide out the front section of the steel frame *(see Photograph 8).*

To disassemble the cylinder gently wedge off the face cap, it must be re-used. Next remove the "C" clip on the back of the cylinder plug. The cylinder plug will now slide out the front of the housing. The lock contains seven tumblers in positions 1 through 7. There are six depths *(see Photograph 9).*

The last lock of this article is the lock-out cylinder for the trunk lid and gas door release. This lock controls the ability to release the locking mechanism of the trunk lid and gas cap cover. To service the lock, it is necessary to lift up the little trim piece door on the plastic cover and remove the single Phillips head screw. The plastic cover will now slide off with a little back and forth motion *(see Photograph 10).*

This lock, too, is held in a steel frame and is removed by gently prying it out of its plastic seat. Once removed the lock can be serviced.

To disassemble the lock, the face cap must be removed, to do this it may result in damaging the cap. Although there is no exact replacement cap available, I use Auto Security Product's P-30-217 as a replacement cap. Remember only a small section of the cap is actually seen through the plastic trim cover.

Next remove the "C" clip on the back of the cylinder plug, remember to mark the tailpiece to index the way it came off, since it can be re-installed 180 degrees off. The cylinder will now slide out the front of the housing. The lock contains seven tumblers in positions 1 through 7. There are six depths. *(see*

11. The disassembled trunk/gas cap lock.

Photograph 11).

Key Generation

Making a first key to this car is easy, although it may be helpful to get a magnifier to read the code as they stamp it so small.

Method 1. Remove the glove box lock and read the code stamped on it. The code will be the bottom or last set of digits. All code numbers range from 5000 through 8442.

Method 2. Remove trunk lid release lock near driver's seat and read code stamped on lock to make key. The code will be the bottom set of digits, all numbers in the range of 5000 through 8442. If code is not stamped correctly then disassemble this lock or the trunk lock for positions one through seven. Then progression the last remaining cut, in position eight, in the ignition lock

Key Blank: *ILCO X182, X193, HD91, HD96, SILCA HON45R, HON51R*

Code Series: *5001-8442*

HPC 1200CM: *CF74*

HPC Punch: *PF74*

M.A.C.S.: *5*

Center of first cut: *.108*

Cut to Cut: *.0845*

Depths: *1=.307, 2=.294, 3=.282, 4=.269, 5=.257, 6=.244*

NOTES

The 1995 Toyota Celica, Part 1

By Michael Hyde

This month we take a look at the popular selling Toyota Celica. This model has a sleek and sporty look *(see Photograph 1)*. The keying kit for this model is ASP part number A-30-108 or A-30-150. This car uses the newer Toyota keyway and tumbler system, incorporating split tumblers. However, these tumblers use a different rule of thumb than most other brands using split tumblers. Since these split tumblers in the same space rest on the same cut flat of the key at the same time, they must always be the same depth. Therefore, it is not necessary to know which chambers use split tumblers to generate a key to this car. In other locking systems, such as your high-security sidewinder keys, the split tumblers ride on opposite sides of the key allowing for different depths to be used.

1. The 1995 Toyota Celica.

This is a one key car, typical with most Japanese cars. This model also comes with a valet key to lockout using the trunk and glove box locks.

Opening The Car

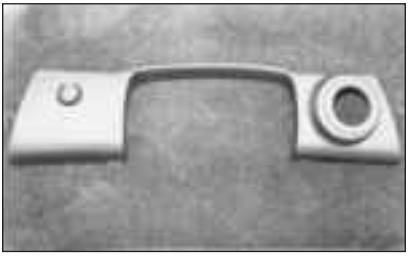
I found this car can be opened a couple of different ways. The first way was to use what is commonly called an Across-The-Car tool. Remember to always take your time and do not force anything when working with glass. We used the tool to rotate the locking button to the unlocked position *(see Photograph 2)*.

The other way I found to open this car was to use an Under-The-Window tool. Take care when inserting and moving around this tool. I used a narrow version of this tool to rotate the

2. After carefully wedging the window back and use an Across-The-Car tool to flip open the lock button.

3. Using an Under-The-Window tool can also be used to open this vehicle.

4. The ignition is found in the dash and requires a key for removal.



5. Removing the dash trim piece will expedite lock removal.

6. Remove the Phillips head screw and trim piece.

locking button to the unlocked position *(see Photograph 3).*

Ignition Lock

We start out servicing the ignition on this car. To remove the ignition cylinder lock it is necessary to have a working key. Without a key the lock must be picked or impressioned to remove it without destroying the lock. Both of these methods are difficult and impressioning is not recommended as this lock uses split wafers. If lock removal without a key cannot be accomplished, it will be necessary to drill, remove and replace the lock. *(see Photograph 4).*

To get to the cylinder more easily it is necessary to remove the plastic dash trim piece. This is accomplished easily by gently unsnapping it from the dash, and removing the wires attached to the dimmer switch located on the left side of the trim piece *(see Photograph 5).*

Next it is necessary to remove the single Phillips-head screw that holds the plastic trim piece in place around the face of the lock *(see Photograph 6).*

7. Depressing the retainer for lock removal.

8. Remove the snap ring from the back of the plug.

Now it is time to remove the lock cylinder, first insert the working key and rotate it to the ACC position. Next insert an "L" shaped tool or probe with a 90 degree bend to depress the active retainer and pull outward on the cylinder for removal *(see Photograph 7).*

To disassemble the cylinder you will have to first remove the Tru-arc snap ring mounted on the rear of the cylinder plug *(see Photograph 8).*

There are two solid roll pins and one tension pin that must be removed in order to disassemble the cylinder facecap of the lock. I usually drill next to the pins and then pry them out. An alternative way for removing the side (solid) pins is to sharply hit the lock against a hard, covered surface. These pins are loose and normally dislodge enough to grab with a pliers for removal. Make sure to use a block of wood or other covering to protect the lock's finish. If the black finish does become scored, use a black indelible marker to touch up the surface *(see Photograph 9).*

Once the cylinder facecap is removed, the cylinder plug can be slid out of the housing. The cylinder plug contains all eight positions. Positions four and seven use split tumblers, the rest are all solid tumblers *(see Photograph 10).*

Next month we'll take a look at the rest of the locks and key generation.

9. Remove the three roll pins and the face-cap from the lock.

10. The plug can now be removed for service.

The 1995 Toyota Celica, Part 2

By Michael Hyde

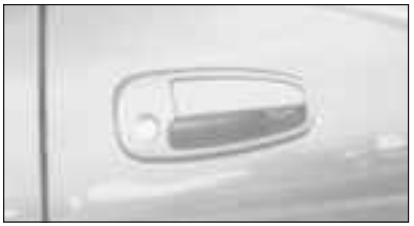
Last issue we covered the ignition lock on a 1995 Toyota Celica. This month we complete the Celica service, starting with the door lock.

Door Lock

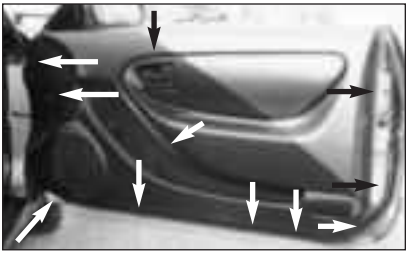
The door lock cylinder is integrated into the door pull handle assembly, that has become more and more common *(see Photograph 1)*.

To remove the door lock cylinder it is necessary to remove the door panel. The panel has several fasteners to remove. There are three plastic fasteners on the rear edge of the door, one screw on the inside door release/locking button assembly, one screw on the lower portion of the door pull, and four screws on the bottom of the panel. There is also two screws that have plastic trim covers on them that have to be removed *(see Photograph 2)*.

Once all the fasteners are removed, pull outward on the lower portion of the panel in order to remove it. The panel is held onto the door by the standard push-in style plastic clips. When removing the panel be sure to also unsnap any electrical connections *(see Photograph 3)*.

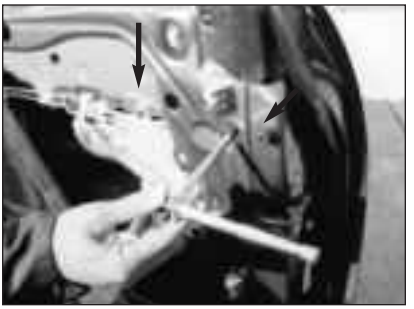


1. The door lock is incorporated into the handle assembly and cannot be removed without first removing the handle.



2. Remove all the screws and clip from around the door panel.

3. Remove the door panel being careful to unsnap electrical connections.



4. Remove the two 10mm bolts that hold the handle in place.

Next thing to do is remove the two 10mm bolts that hold the handle/lock assembly in place. This I have found is the best way to gain easy access to the lock cylinder *(see Photograph 4).*

Now push out-ward on the lower portion of the handle to gain access to the lock cylinder, whether your removing the cylinder to service it or read the code stamped on it. The cylinder is held to the handle with a wire clip *(see Photograph 5).*

The door lock cylinder has a face-cap that must be removed carefully in order to re-use it. The caps are not produced by ASP. It is also necessary to remove the "C" clip on the rear of the lock, to remove the tailpiece *(see Photograph 6).*

5. Gently pull the handle out to read the code or remove the lock. The lock is held to the handle via wire clip.

6. Gently remove the facecap, it must be re-used. Then remove the C clip on the back.

The lock cylinder consists of the cylinder plug, tumblers, cylinder housing, tailpiece, plug spring, facecap, and "C" clip *(see Photograph 7).*

The door cylinder plug has all eight tumbler positions. Positions four and seven are split tumblers *(see Photograph 8).*

Trunk Lock

The trunk lock cylinder is located in the body, near the passenger side taillight *(see Photograph 9).*

7. The disassembled door lock.

8. The door cylinder has all eight tumblers positions.

9. Location of the trunk lock.

10. Most models have a manual trunk lever release at the left side of the driver's seat. This can be used to access the trunk if a key is not available.

Most models now have a manual trunk lever release located on the left side of the driver's seat, on the floor *(see Photograph 10).*

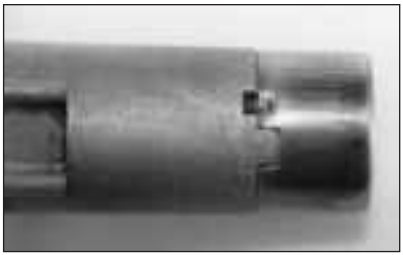
11. Eight fasteners hold this plastic trim piece in place.

To service the trunk lock it will be necessary to remove the rear plastic trim piece. It is attached with eight fasteners that must be removed. Once you have removed the trim piece you have plenty of access to the lock *(see Photograph 11).*

12. After disconnecting the cables, the lock can be removed by taking out the two 10mm bolts that hold it in.

Code Series: *.....10000-15000*
Key Blank: *.....Ilco X217/TR47 /Silca TOY43*
Reed Codes: *.....11-02-064*
HPC 1200CM #: *.....CF208, PUNCH PF208*
M.A.C.S: *.....2*
First Cut: *.....885 (measured from tip)*
Cut to Cut: *.....090*
Depths: *.....1=.323, 2=.299, 3=.276, 4=.252*
Framon: *.....Use Ford 5 PIN Spacing Clip*
Starting Cut @ .017 (First Cut From Bow)

13. Remove the C clip and pull off the tailpiece.



14. Like the door facecap, the trunk's facecap must be re-used.

15. The disassembled trunk lock.

The lock is bolted to the car body with two 10mm bolts. Since this lock has the a feature to lock-out the manual trunk re-lease lever there are two cable attached to it. One cable connects the lock with the latch assembly and the other cable is the manual release lever cable. When the lock cylinder is in the horizontal position the manual trunk lever release will not operate. When the lock cylinder is in the vertical position the release lever cable will pull on the tailpiece of the lock cylinder and in turn will pull the latch cable to the release position allowing the trunk to open *(see Photograph 12)*.

A view of the rear section of this lock's tailpiece is seen in *Photograph 13.* The "C" clip has to be removed to slide the tailpiece off the lock.

It will be necessary to remove the facecap in order to disassemble the cylinder plug from the housing. Gently pry up on the detent tabs to remove the cap, the cap will have to be re-used *(see Photograph 14)*.

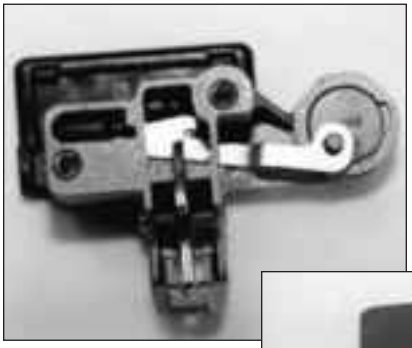
The disassembled trunk lock cylinder is pictured. The cylinder plug contains tumblers in nine positions. The first eight are the normal spaces and the ninth position is for the Valet function of the lock. Positions four and seven use split tumblers *(see Photograph 15)*.

Glove Box Lock

The glove box lock is held into place by way of two screws *(see Photograph 16)*.

Once the lock is removed from the car it is easily serviced. Push in on

16. The glove box lock is held in place by two screws.



17. Depress the retainer on the back of the plug and push it out the front.

the retaining wafer to slide the cylinder plug out the front of the housing. The plug contains tumbler positions 5, 6, 7 and 8. There is a split tumbler in position seven. There is an additional tumbler position for the Valet function of the key *(see Photograph 17).*

Method #1) Check owners manual for code, written in by the dealer or fellow locksmith.

Method #2) Remove passenger door cylinder and read code stamped on lock.

Method #3).Disassemble door cylinder or trunk cylinder and decode wafers to make master key.

(TIME: 10-20 minutes)

The Lexus LS400, Part 1

By Michael Hyde

The Lexus LS400 is one of Lexus' best selling cars. The LS400 is the flagship of the Lexus line, it is also the top of the line automobile from Lexus. *Photograph 1* shows a side angle and tail view of the car. What is missing? The 1990 through 1994 LS400 is the only Lexus that does not have the model name on the exterior. The Lexus also uses a unique High Security key, utilizing a 4-Track Internal High Security keyway.

1. The front view of the Lexus LS400.

Because of the complexity of working on this vehicle, we will cover it a step at a time, starting with opening techniques and then moving into lock removal.

Opening Techniques

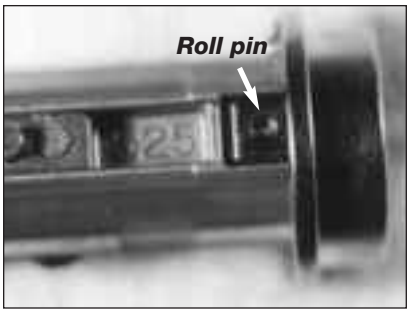
This car can be a tricky one to open. It is not difficult, just tricky. Once you have unlocked the car, it re-locks itself. The Lexus line uses a sophisticated locking system that knows the key is not opening it, so the car's alarm system is activated and the door lock motors re-lock the car within approximately one second of time to spare. An inside the car opening tool, sometimes referred to as an Under-The-Window tool, can be used to open this vehicle. A closer look at the tool in the working position is shown in *Photograph 2.* I usually enlist the customer's help when I open these cars, by having the customer pull up on the handle in fast repetitive motions, as I unlock the car.

2. Opening the LS400 using an Under-The-Window tool.

Ignition Lock

The ignition cylinder is easier to remove than it appears. There is a padded dash cover that sits over the cylinder. The cover simply snaps right off with a gentle pulling pressure and then remove the screw that holds the plastic bezel in place *(see Photograph 3).* Stop now and disconnect the battery, before proceeding. Insert a working key and turn the key to the ACC (accessory) position. Reach in with a L-shaped probe on top of the

3. Remove the dash cover and the plastic bezel from around the lock.



5. The face cap is held to the lock body by both a roll pin and two staked posts.

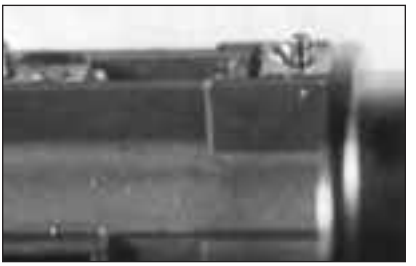
ignition housing and depress the retainer and pull out the ignition cylinder *(see Photograph 4).*

You can always tell a Lexus High-Security ignition cylinder because when you look directly at it you can see the two key guides sticking out in the keyway giving it a look of the letter "H."

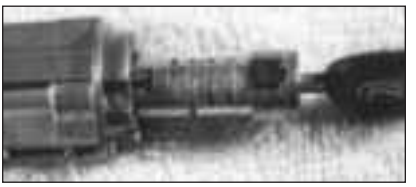
To disassemble the cylinder you must first remove the ignition face cap. It is held on by a roll pin located on the top *(see Photograph 5).* and two staked posts found at its back. I drill a small hole directly next to the pin in order to use a pin punch to pry out the pin *(see Photograph 6).*

To remove the face cap without damaging the two staked posts, place the cylinder in a vise. Do not over tighten the vise and crush the lock. Use a pin punch and a hammer to strike the posts in consistent light blows to each post

4.The cylinder coming out of the housing.



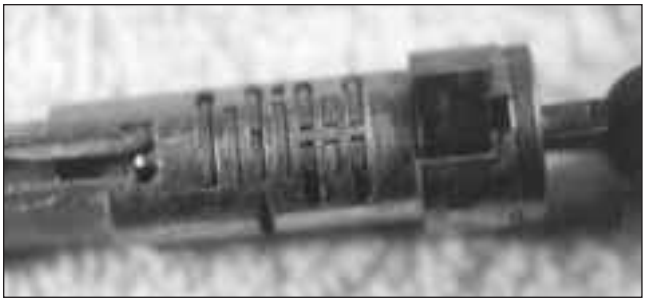
6. Drill a small hole next to the pin and pry it out with a pin punch or scratch awl. Then use a punch and gently tap the staked posts through the body to remove the face cap.



7. Use the key to remove the plug.

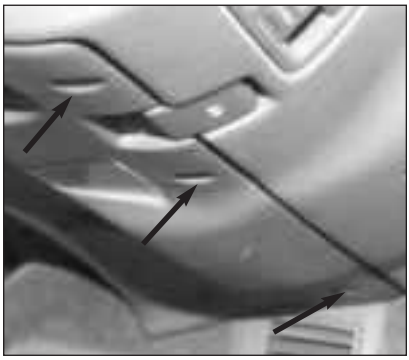
in succession to allow the posts to travel back through the cylinder housing and avoid breaking the posts. Next you will need to remove the plug retaining ring on the back of the cylinder.

Insert the key and remove the plug *(see Photograph 7).* Note the tumbler positioning as seen in *Photograph 8.* The first three positions are for split tumblers and



8. The ignition is made up of a combination of split and whole wafers. There is no eighth position tumbler in this lock.

9. The trunk release lock.



10. Remove three screws and drop the knee bolster or lower panel to get to the trunk release lock.

the next four positions are solid tumblers. There is no eighth position tumbler in the plug.

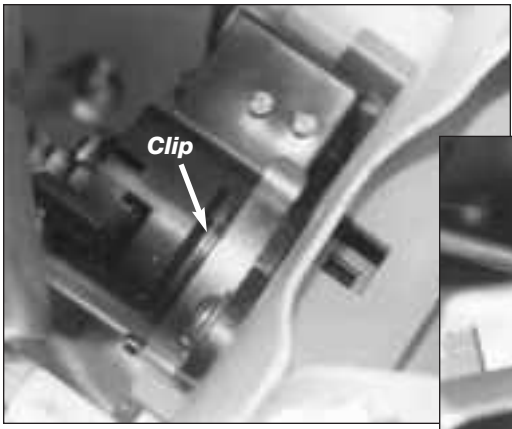
Valet Lock-Out Switch

At the bottom driver's side of the dash board is a trunk release lock *(see Photograph 9)*. In the locked position you are prevented from opening the trunk using the electrical release. This cylinder also contains all the tumblers that appear in the trunk lock. To get to the lock, the lower cover has to be removed and is held in place by three screws *(see Photograph 10)*. As the panel is lowered a large spring clip can be seen. This clip holds the panel to the steering column, pulling down on the panel releases the clip.

The next panel to remove to gain access to the lock is the lower driver's side panel, there are six 10mm bolts to remove, and are quite easy to get to. The first two 10mm bolts are found at each end of the panel, easily seen and easily removed. Two more 10mm bolts are located directly under the Parking Brake Release, you can see them and remove them without having to move anything out of the way. The last two bolts to remove are directly under the ignition cylinder housing.

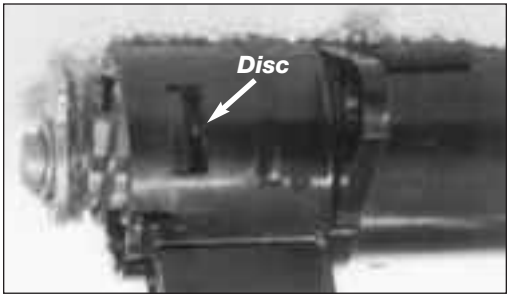
There is a padded dash cover that hides these last two bolts. The cover just snaps off with a gentle pulling action (as discussed earlier in the Ignition servicing section). There are a couple of snaps that hold the panel in place and once you remove the six screws, gently pull outward on the panel to dislodge it.

On the backside of the valet lock-out key cylinder there is a spring wire clip. Remove the clip and push



11. Remove the clip from around the lock and depress the lock retainer to unlock the trunk release.

12. Remove the two screws to remove the lock from the release.



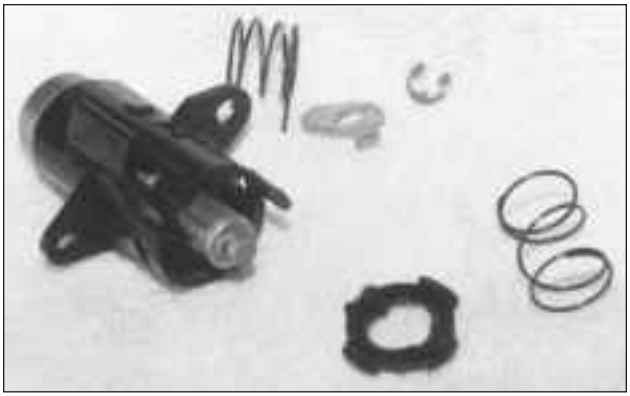
13. Gently remove the plastic disc from the back of the lock.

in on the lock retainer and the lock will return to the unlocked position *(see Photograph 11).* Now if that isn't a nice trick, I don't know what is.

There are two screws that hold the lock housing in place. Remove the screws and then pull outward on the cylinder housing to snap it apart from the front trim bezel *(see Photograph 12).*

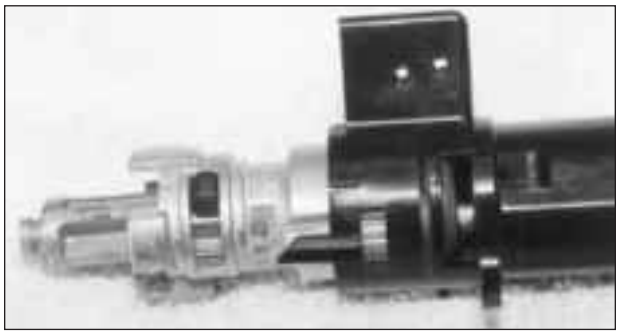
To avoid damaging it, the electrical micro-switch on the back of the lock must be removed. It is held in place by two small screws. Remove the E-clip that holds the tailpiece to the lock. Before you remove the tailpiece, take note of what I call the turning spring and its exact location. Remove the E-clip, remove the tailpiece, remove the turning spring.

The next piece to remove is the plastic stopping disc. The disc is held in place on two sides of the housing, if you gently, and I mean gently, use a small screwdriver you can remove the disc by wedging it out of



14. We now have access to the lock cylinder.

15. Remove the lock cylinder. Pressing on the retainer may b



16. The plug and all of its tumblers.

the way. *Photograph 13* shows one side of where the disc is held in place. Once the disc is removed be careful not to loose track of the push-spring held in place by the disc.

Photograph 14 is a view of the lock disassembled to the point where the lock cylinder can be accessed. The lock cylinder can be removed from the housing by sliding it out the rear of the assembly. It may be necessary to push in on the lock retainer to ease this procedure.

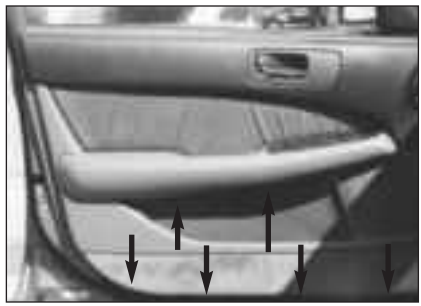
Remove the reusable face cap and then slide the plug out the front of the cylinder housing *(see Photograph 15).* It may be necessary to push in on the retainer to ease the plug out, watch out for the retainer as the plug is exposed the retainer and the spring behind it may go flying. There are eight tumbler positions in this lock, first four are solid, next three are split, and the last one is solid *(see Photograph 16).*

The Lexus LS400, Part 2

by Michael Hyde

Door Lock

1. The door lock and handle are part of one assembly and can only be removed from the inside after removing the door panel.

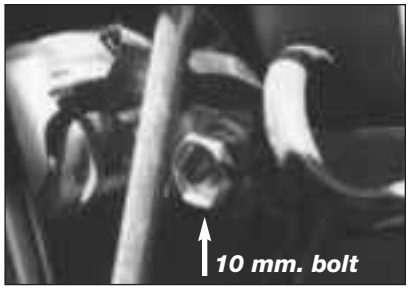


2. To remove the panel remove the four screws on the very bottom of the panel, the two screws under the arm rest, the screw located near the latch assembly and the screw located in the heater vent tunnel.

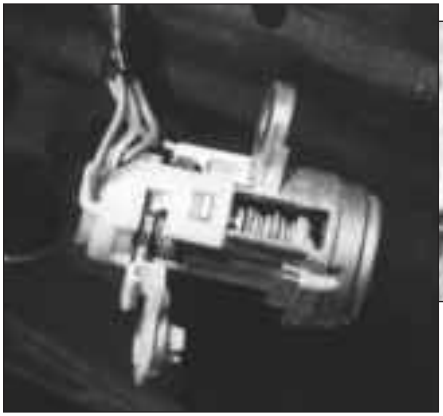
3. Next, remove the trim piece on the inside release lever. Use a small screw driver to gently pry the trim out from the top and bottom pin retainer.

4. Then, gently pry up the electric window controls, to gain access to the one hidden screw located in this cavity.

5. Photograph five is a view of the driver's door with the panel removed.

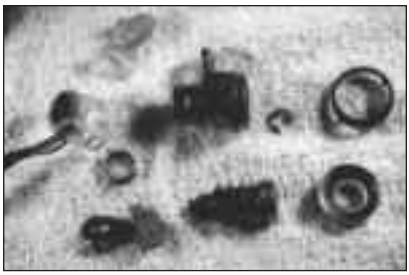


6. Use a 10mm socket to remove the lock from of the door handle.

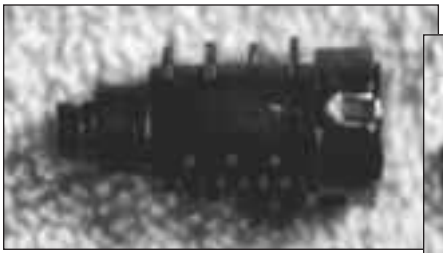


7. The lock is connected to the cars computer system and the switch just snaps off, providing a view of the code stamped on the lock.

8. To disassemble the lock you must snap off the black plastic trim cap.



9. Next remove the reusable face cap and the E-clip that holds the tailpiece on. Slide out the cylinder plug.

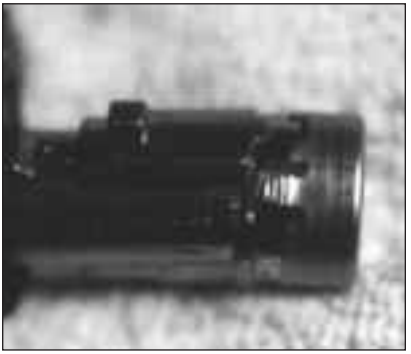


10. The door cylinder contains tumblers in positions 1 through 7. The first four tumblers are solid and the next three are split.

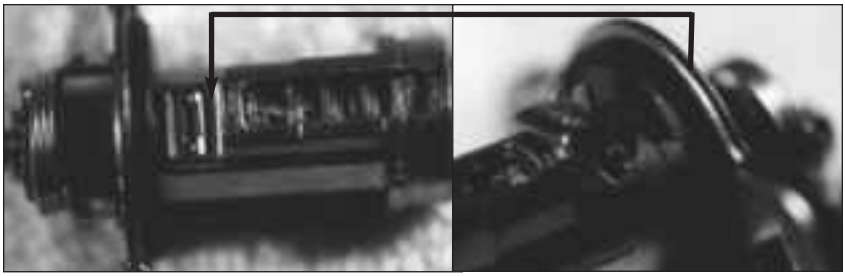
11. This photograph shows where the trunk lock is located on the car. With the exception of the ES250, which requires tail-light assembly removal, all Lexus trunk locks can be removed from the back.

12. There is an access hole in the deck lid liner where the lock can be seen. It is best to partially remove the liner as not to damage it.

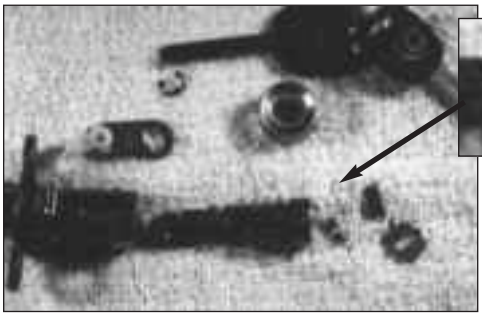
13. To remove the lock, unsnap the electrical switch on the back of the lock, remove the linkage rod, and then remove the two 10mm bolts that hold it in place.



14. To disassemble the lock remove the re-usable face cap off the lock.



15. There is a retainer in the back of the cylinder housing that keeps the plug from being forcibly removed. Drill to the side of the retainer and pry it out.

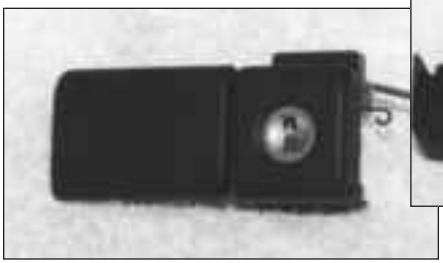


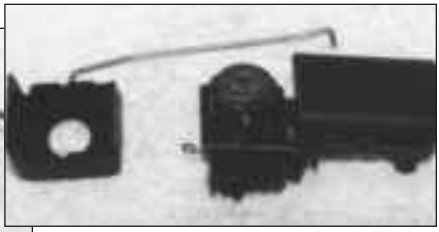
16. The plug can now be removed from the shell. The trunk cylinder contains tumblers in positions 1 through 8. The first four tumblers are solid, the next three are split and the last one is a solid tumbler.

Glovebox Lock

17. Above is a view of the glove box lock. Open the glove box and remove the back cover to gain access to the lock.

18. Remove the two screws that hold the lock in place and disconnect the small linkage rod to remove the lock.





19. Remove the plastic cap on the front and the linkage rod.

20. Depress the spring tumbler retainer and slide out the plug. The glove box uses all solid tumblers in positions 3 through 8.

21. The Auto-Security Products pinning kit #A-30-110 contains all the tumblers used in the locks. The tumblers are stamped with a depth number. A number 5 depth is a shallow depth and a number 1 is the deepest depth.

Lexus Deck Lid Release Notes

•ES250 — Manual release lever near left side of drivers seat.

•ES300 — Push in button on drivers door panel, on-off switch located in glove box.

•GS300, LS400, SC300 & SC400 — Flip-button and valet key lock-out switch located on left lower side of dash panel. By lowering the panel you can reset the valet lock by pushing in on the detent on the side of the lock housing, this detent may be hidden under a large wire clip that encircles the housing of the lock.

Making First Key

Cutting and/or generating a Lexus key requires a high security key machine and code attachment.

Before cutting a key, remember these facts about the Lexus keying system:

1. All tumblers are numbered, but are reverse of normal depths, a number 5 is a shallow cut and a number 1 depth is the deepest cut.

2. Tumbler position 8R is always a number 4 depth for the master key, and a number 2 depth for a valet key. This is the only difference between a master and a valet key.

3. Tumblers 4L and 8L are not used in any locks, but must follow MACS (So the key works smoothly). To make cutting easy, cut these to a 3 depth.

4. Because of the tolerances of the center groove you cannot have a number 5 depth on the left track opposite a number 4 or 5 depth. Doing so doesn't allow enough room for the key to pass down in the keyway of the lock. (and visa-versa).

Method #1. If possible remove trunk lock and disassemble and decode, otherwise remove the valet lock-out cylinder and disassemble and decode.

Impression remaining positions 1L, 2L, and 3L in the ignition. (It helps to use a lighted 10x magnifying glass.)

Method #2. If possible remove trunk lock and disassemble and decode, otherwise remove valet lock-out cylinder and disassemble and decode.

Create a MACS chart and progression cuts 1L, 2L, & 3L in the ignition.

Trouble-Shooting

Keys Locked In Trunk:

You unlock the car, but the Valet-Lockout cylinder is locked. You will have to get to the back of the Valet-lockout cylinder by lowering the bottom portion of the drivers side dash. On the back side of the cylinder is a wire clip that partially wraps around the cylinder. Remove the clip and depress the plastic retainer, the cylinder will then pop-out to the unlocked position.

The Valet-Lockout Cylinder Is Unlocked But The Trunk Does Not Open:

The reason for this is the factory alarm system has shut down certain operations of the on-board computer. If you close both doors, the alarm will re-lock them. To turn the computer back on, you will have to reset the alarm. To do this, remove either door panel, follow the two or three wires off of the door cylinder to where they meet at the snap-connector. Unsnap the connector and jump the leads until the alarm resets. Usually you cannot hear when the alarm resets. Now you will be able to activate the electric trunk release switch.

Tumbler Positions

	LEFT	Tip	RIGHT			
	X	*8*	*T*	*G*		
	D	*7*	*I*	*D*	*T*	*G*
T	*D*	*6*	*I*	*D*	*T*	*G*
T	*D*	*5*	*I*	*D*	*T*	*G*
T	*X*	*4*	*I*	*D*	*T*	*G*
	I	*3*	*I*	*D*	*T*	*G*
	I	*2*	*I*	*D*	*T*	
	I	*1*	*I*			

NOTES

The 1994 Nissan Altima

by Michael Hyde

This month we take a look at the Nissan Altima *(see Photograph 1)*. The Altima is a popular selling car for the price range of $13,000 to 19,000. The car is equipped with dual airbags and uses the standard Nissan keyway. This car, as with most Japanese cars, utilizes one master key for all locks. The valet key is simply a thicker key that will not enter the trunk or glove box lock. The keying kit from ASP is A-16-100.

1. The 1994 Nissan Altima.

Opening

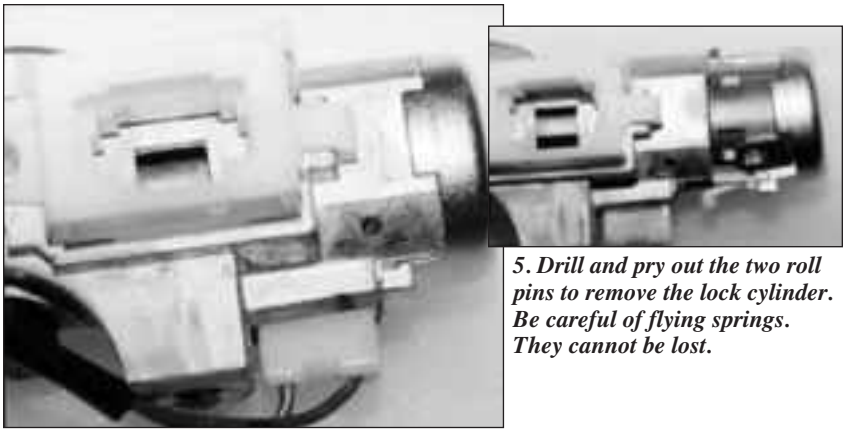
The car is easily opened by inserting an "Under The Window Tool" or "Caddy Killer" on the passenger door. Insert the tool as far forward as possible on the door and position the tool to hit the power door lock button, to unlock the door *(see Photograph 2)*.

All Altima's have a manual lever for releasing the trunk lid.

2. Use an Under The Window tool to open the vehicle.

3. Removing the two piece clam shell shroud exposes the lock.

4. The lock must be removed for servicing.



5. Drill and pry out the two roll pins to remove the lock cylinder. Be careful of flying springs. They cannot be lost.

Ignition

The ignition lock can be serviced without having to remove the steering wheel and airbag. First, remove the little plastic trim piece around the ignition cylinder face. Remove the four screws that hold the plastic "clam-shell" together. Unsnap the two piece's and remove *(see Photograph 3).*

The complete ignition assembly must be removed to service it. The assembly is held onto the column by two shear-head bolts. Remove the bolts and disconnect the necessary harnesses to release the lock *(see Photograph 4).*

To disassemble the ignition you will have to remove the two solid roll pins that hold the cylinder in the housing. Drill a 7/64" hole next to each pin and pry the pin out *(see Photograph 5).*

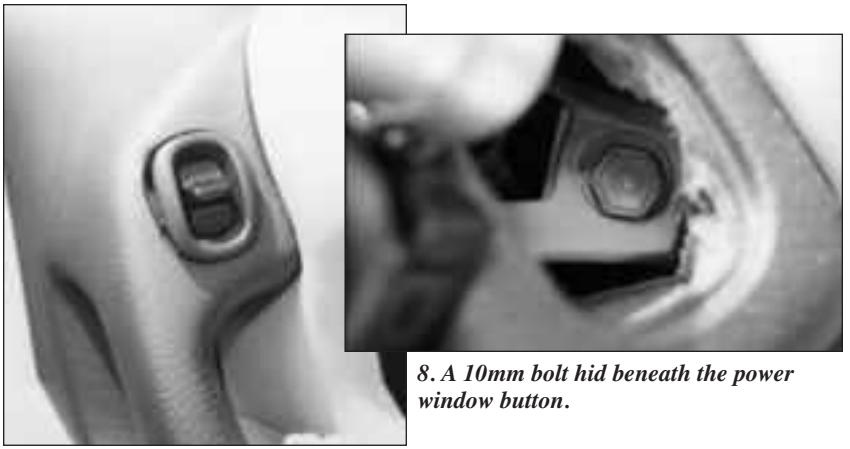
Once you have removed both pins, you can now pull the cylinder and housing face off of the assembly. When sliding the cylinder out be careful as there is a spring loaded activator on each side of the cylinder. Slide the housing face off the cylinder to disassemble the cylinder plug. There are two small detent activators on each side of the cylinder plug itself. Be careful and take your time to remember where each piece fits into *(see Photograph 6).*

6. The disassembled lock.

Door Lock

For this article we are using the passenger door. The door lock cylinder is separate from the door handle. To remove the door cylinder you must remove the door panel. The panel has three screws on the bottom that need to be removed, and one trim clip on the right side.

7. Make sure and remove all of the fasteners before removing this door panel.



8. A 10mm bolt hid beneath the power window button.

There is also one 10mm bolt located below the armrest that must be removed *(see Photograph 7).*

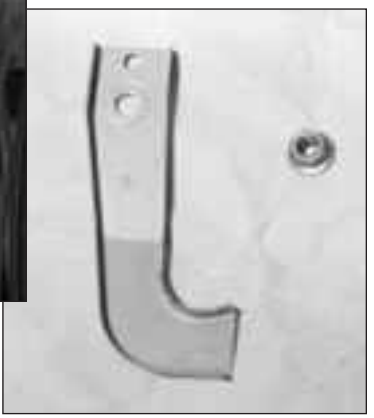
Next unsnap the power window button and behind it you will need to remove the 10mm bolt *(see Photograph 8).*

The trim piece around the inside handle release will unsnap as it is not held on with a screw *(see Photograph 9).*

9. Unsnap and remove the handle.

Once the trim panel is removed you can see the linkage rods and bell crank. To remove the lock cylinder you must remove the 10mm nut that holds in the anti-theft support arm. The nut is easily accessible through the hole in the sheet metal. The cylinder is held in place with a standard type of horseshoe clip *(see Photograph 10).*

The lock cylinder has a large drain hole area to see the tumblers through. The lock can be disassembled by removing



10. Release and remove the anti-theft support arm and lock. The arm is held on using a 10mm nut. The lock is held in place using a horseshoe clip.

11. The door lock disassembled. If necessary, the tumblers can be read through the drain hole on the bottom of the cylinder.

the "E" clip on the tailpiece and by removing the face-cap. The replacement cap is ASP #P-16-205. The lock contains all eight wafer tumblers needed for a master key *(see Photograph 11).*

Trunk Lock

The trunk lock has a name plate cover over it when not in use, the cover slides out of the way to insert the key. The lock is held in place by a horseshoe style clip and is accessible from inside the trunk *(see Photograph 12).*

Once the lock assembly is out of the car you can see about half the wafers through the drain hole. The cylinder plug has a black plastic

12. A horseshoe clip holds the trunk lock in place.

trim piece in the front of the lock assembly.

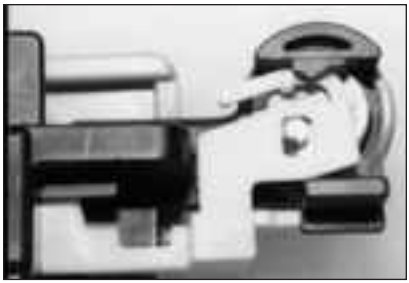
Remove the rubber gasket on the back side of the lock and use a small screwdriver to gently unsnap the trim piece legs. The trunk lock contains all eight wafer tumblers to make a master key *(see Photograph 13).*

Glove Box Lock

The glove box lock is time consuming to disassemble. You must remove the 15 screws on the back side of the glove box door in order to get to the lock cylinder.

Once the lock assembly is removed from the door, you will be able to see the retaining tumbler on the backside of the lock. Push in on the retaining tumbler and slide the cylinder plug out. The plug has chambers for all eight tumblers but is only

13. Remove the rubber gasket from the lock. Then use a small screw driver to unsnap the face cap tabs. The lock can now be disassembled.



14. Hit this retainer to remove the glove box plug.

loaded with 4 tumblers *(see Photograph 14).*

First Key Generation

In 1993, Nissan stopped placing the key code on the door lock tailpiece and no longer has a key code sticker in the glove box. The fastest way to make a key to this car is to open the trunk, via the lever release, and remove the trunk lock. Disassemble the lock and decode the wafer tumblers to make a master key. The doors, trunk and ignition locks all contains the same wafers, in the same positions. Using this method, average time for first key is 15 minutes.

Code Series: *X 1-8000*
Key Blanks:
Ilco X123/DA25, X124/DA28, X197/DA30, X210/DA31
Silca DAT13, DAT14, DAT15, NSN11
HPC Card: *XF67*
MACS: *2*
Shoulder to center of first cut: *.118"*
Cut to Cut: *.085"*
Depths: *1=.276", 2=.256", 3=.236", 4=.217"*
Tumbler Placement:

1	2	3	4	5	6	7	8	
x	x	x	x	x	x	x	x	*Ignition, Doors, Trunk*
x	x	x	x					*Glove Box*

NOTES

The 1993-95 Mazda RX7

by Michael Hyde

Mazda released its new completely re-designed RX7 in 1993. Besides many innovative changes in design, there was a big change from Mazda deep inside the ignition cylinder. A sidebar, double-sided wafer cylinder. The new RX7 is pictured in *Photograph 1.*

1.The RX7 front and back.

2. The new sidebar ignition.

The RX7 ignition looks generally like all other late model Mazda ignitions *(see Photograph 2).*

A Mazda computer analysis reveals that 86 percent of all new RX7's sold were equipped with a standard transmission. The ignition locks are different if it is an automatic transmission or a standard transmission because of the automatic transmission parking gear interlock required by federal law.

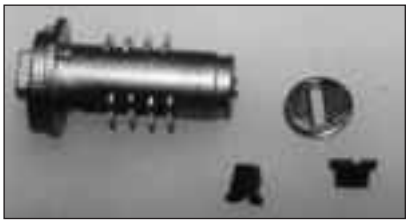
The ignition cylinder is held in place to the housing by four serrated solid roll pins. Drill a 7/64" hole directly next to each pin. The depth of the drill hole should not exceed 1/4" *(see Photograph 3).*

After the four pins are removed, the cylinder will slide right out. There is only one spring that can fall out while removing the cylinder, but luckily it is located on the back of the cylinder plug and will not go flying, never to be seen again *(see Photograph 4).*

To remove the plug from the cylinder you will need to rotate the

3. Drill and pry to remove the roll pins that hold the cylinder in the housing.

4. The cylinder removed. Notice the small spring protruding from the back of the lock. Do not lose it!



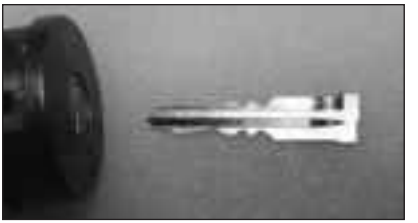
6. The plug and its components removed from the shell.

plug. Make a duplicate of the working key and cut the bow off *(see Photograph 5).*

Insert the key and rotate the plug and then slide it out the rear of the cylinder. After you remove the plug the hardened face plate and key buzzer actuators will fall out. The way they are shaped allows for them to only go back in position one way *(see Photograph 6).*

A close-up view of the cylinder plug shows eight tumblers, four on each side, and the side-bar *(see Photograph 7).*

8. The components that create the "push and turn" operation of the plug are now removed.

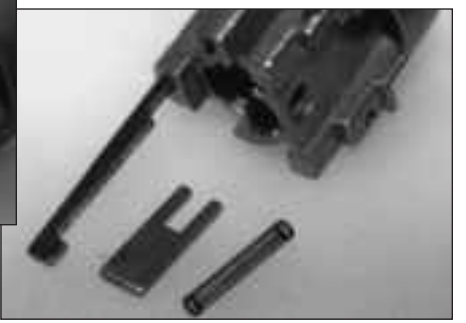


5. To remove the plug it is necessary to make a second working key with the bow removed.

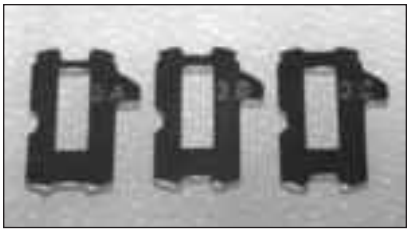
7. A close-up of the plug showing the wafers and sidebar.

Once the cylinder plug is out of the housing, the "push and turn" device may fall out *(see Photograph 8).*

The ignition cylinder assembly is made up of several small pieces, but is easily recognizable *(see Photograph 9).*



9. The completely disassembled ignition cylinder.



10. The new tumblers and new markings.

The new RX7 uses a new type of ignition tumbler that has a notch on the side for the side-bar and has a letter designation along with the numeral depth *(see Photograph 10).*

I have rekeyed this cylinder using the correct depth but using a different letter designation and found it to work the same. There is a slight physical difference to the different letter designations but not a working difference between using a "3A" tumbler compared to using a "3C" tumbler. The tumblers inside dimensions and height dimensions are exactly the same for each letter designation in each depth group. Why Mazda has used the letter designations in this lock is not clear, at this time.

Auto-Security Products makes the keying kit for this type of ignition and their part number is A-20-102 *(see Photograph 11).*

11. ASP Mazda pinning kit A-20-102.

Tumbler Positions

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*(tip)*
x	*x*	*x*	*x*	*x*	*x*	*x*	*x*			*Ignition*
		x	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*Door, Trunk*

Code Series: *10100-12099, Mazda 10 cut*
Key Blank: *Ilco X222/MZ27, Silca MAZ20R*
HPC Card: *CF68*
MACS: *3*
First Cut: *.098*
Cut To Cut: *. 083*
Depths: *1-.315", 2-.299", 3-.284", 4-.268", 5-.252"*

The Nissan NX2000

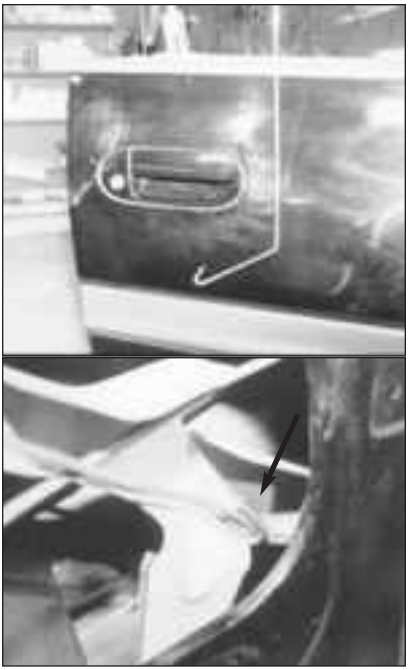
by Michael Hyde

The Nissan NX series only lasted from 1991 through 1992. It is a small sporty and good handling car. There were two NX's in the series, the 1600 and the 2000. The 1600 is the stripped-down version. The key for these vehicles has eight positions with four depths. The ignition, door and trunk lock contain all eight tumblers. The glove box has four tumblers in the first four positions. It uses the ASP kit #A-16-100 or A-16-106 *(see Photograph 1).*

1. Front and rear view of the NX series Nissan.

Opening

The NX can be a tricky car to open. The linkage rods are shielded with sheet metal. There is an opening in the shielding to get a tool in position to unlock the car. To unlock the car you must slide the linkage rod towards the front of the car *(see Photograph 2).*



2. Opening can be tricky but not impossible.

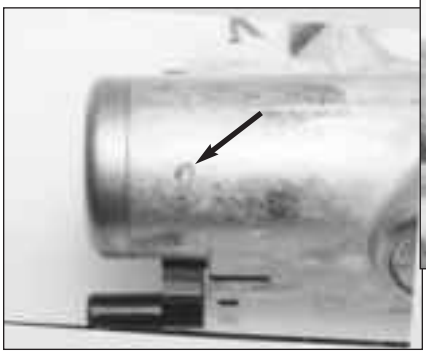
Ignition

The ignition is a bit of work to service. First you must remove the lower plastic kick-panel. There are four Phillips screws holding it on, none of which are hidden. Remove the four screws holding the plastic two-piece steering column shroud together *(see Photograph 3).*

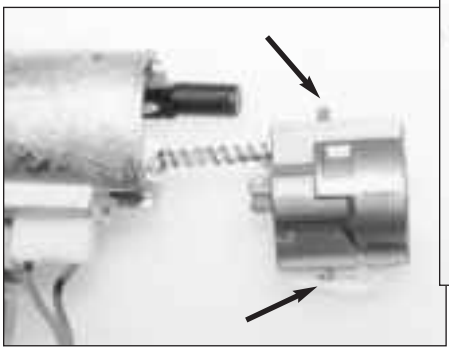
Because of its location, the lock must be removed to service. There are two sheer-head bolts that will also have to be removed *(see Photograph 4).* There are two roll

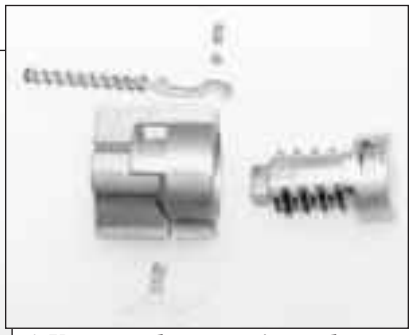
3. There are four screws holding the column shroud together.

4. The removed ignition cylinder.



5. Remove the retaining pins to extract the cylinder from the housing.

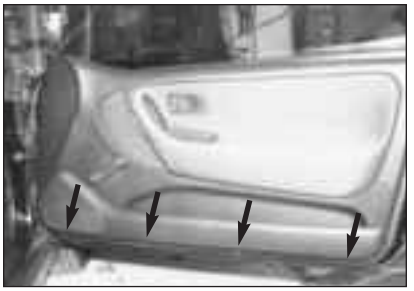




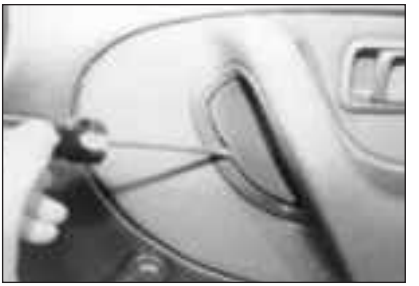
6. Use care when removing and disassembling the lock cylinder.

pins that must be removed. I usually drill right next to them with a 7/16" drill bit and then gently pry them out. Remember not to drill deeper than 1/4" or you can damage internal lock components. Also, never drill in front or to the facecap side of the pin. Doing so allows retaining pin and cylinder movement after the cylinder is replaced. Once the roll pins are removed, you can then slide the ignition face-cap off of the housing *(see Photograph 5).*

When sliding the cylinder out be careful as there is a spring loaded activator on each side of the cylinder. Slide the housing face off the cylinder to disassemble the cylinder plug. There are two small detent activators on each side of the cylinder plug itself. Be careful and



7. The NX door panel.



8. Three screws can be found beneath this trim piece.

9. The removed handle.

10. The code, the lock and the wire retainer.

take your time to remember where each piece fits into *(see Photograph 6).*

The ignition lock cylinder plug con-tains all eight tumblers.

Door

For this article we are using the passenger door. To service the door lock, it is necessary to remove the door panel. The window crank has the usual wire clip that has to be removed. There are four screws that run along the bottom side of the panel and two fasteners on the forward section of the panel that need to be removed. There is one screw that secures the lower section of the inside pull cavity *(see Photograph 7).*

Near the upper portion of the door pull handle is a trim piece that has to be removed. Underneath you will find three screws that have to be removed *(see Photograph 8).*

Now that you have removed the 10 fasteners, you can slide off the panel. The linkage rods are heavily shielded.

It is easy to remove the handle and lock assembly as one piece. Remove the two 10mm nuts that secure the assembly in place. Disconnect the linkage rods from the handle *(see Photograph 9).*

The key code is stamped on the passenger door cylinder tailpiece. The code series runs from X0001-8000. The last four numbers is the actual code. The lock cylinder is held in place to the handle by a wire clip *(see Photograph 10).*

To disassemble the door lock it is necessary to remove the reusable facecap. Next remove the tailpiece and slide the cylinder plug out. The door cylinder plug contains all eight tumblers *(see Photograph 11).*

Trunk

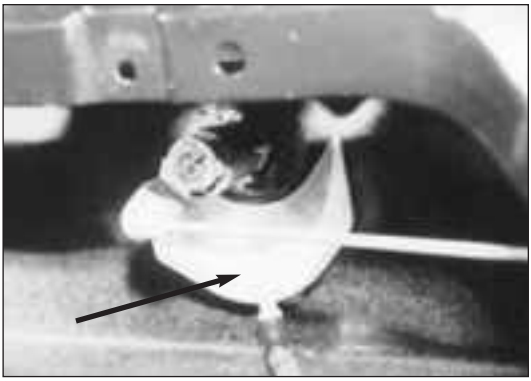
The trunk lock is located on the lower right side of the car. It is held in place by a standard horse-shoe style clip.

To service the trunk lock, it is necessary to unsnap the narrow

11. The disassembled lock.

12. The inside trunk trim panels must be removed to gain access to the trunk lock.

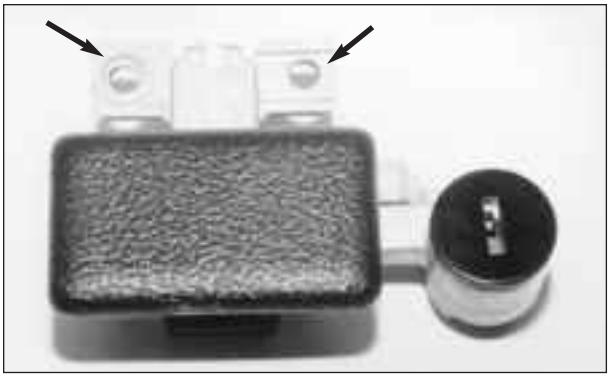
13. When reinstalling the trunk lock, make sure and install the drain cup located below it.



14. The disassembled trunk lock.

plastic trim panel that rides along the top of the hatch opening. Once that is done, you can now remove the twelve plastic fasteners that hold the inside carpet-like panel cover, which will expose the lock *(see Photograph 12).*

Disconnect the linkage rod and remove the lock clip. Take notice that there is a white plastic drain funnel, for excess moisture from the lock, that sits directly under the lock. This funnel is easily knocked off and must be reglued to hold it back in place *(see Photograph 13).*



15. The removed glove box lock.

16. Depress retainer to remove plug.

For the trunk lock cylinder, it will be necessary to remove the facecap and then remove the tailpiece to slide the cylinder plug out. The replace-ment facecap number is ASP P-16-205. The cylinder plug contains all eight tumblers. The trunk lock cylinder disassembled is pictured *(see Photograph 14)*.

Glove Box

The glove box lock is secured to the glove box door by two screws *(see Photograph 15)*. To get the lock out of the glove door you must remove the 13 screws that hold the front and back sections of the door together.

The glove box cylinder plug will slide right out once the retaining tumbler is depressed *(see Photograph 16)*. The glove box cylinder plug contains four out of the eight tumblers in positions 1 through 4.

Code Series: *Y & X 1-8000*

Key Blank: *Ilco X123/DA25, X210/DA31; Silca DAT13, DAT14, DAT15, NSN11*

Reed Codes: *07-03-096*

HPC Card: *XF67*

M.A.C.S: *2*

Shoulder to center of first cut: *.118*

Cut to Cut: *.085*

Depths: *1=.276, 2=.256, 3=.236, 4=.217*

The Mercedes 190E

by Michael Hyde

Last year in October, November and December I wrote about the Mercedes SL600. This month we take a look at the Mercedes 190E, with factory alarm. Due to the purchase price there are a lot more 190Es out there than SL600s. The key for this model has 13 cuts on a two-track high security keyway.

Opening Tip

I have had good luck opening these cars by using a Lemon Pop or similar device. I carefully wedge the side of the window frame and slip in the flat plastic tool with string or rubber hook and slide it around the vertical button to lift up. Because this car uses a vacuum air system to lock or unlock the doors and trunk, it is necessary to maintain a steady upward pressure on the button to unlock the door. When you open the door the alarm should sound.

1. After turning the key to the first accessory position, insert this U-shaped wire into the two holes of the lock facecap.

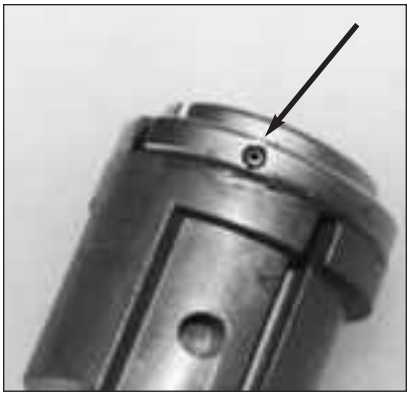
Ignition Lock

The ignition cylinder is held into the ignition steering lock housing by a hardened steel black cover or bezel. To remove the cylinder, you should first remove an outer trim ring that fits around the lock and bezel.

Next, insert a working key and turn to the first accessory position. Insert a small double-ended wire, with angled tips, into the two holes on the face of the ignition *(see Photograph 1)*. It is important to fully seat the wire tool as it has to lock into the locking cams in the lock housing to release the bezel. While pushing in on the wire tool pull outward on the key to remove the cylinder and bezel *(see Photograph 2)*.

The ignition cylinder has a hardened facecap that is held to the plug by a single roll pin *(see Photograph 3)*. It can be extremely difficult to remove this pin without damaging something. Usually the

2. A properly inserted wire.



3. The facecap is held in place by a single roll pin.

cylinder is replaced with a randomly coded one (sometimes called a workshop version) and then a replacement cylinder, coded to the car, can be ordered from the dealer.

There are a few different ways to remove the facecap, the first being to gently pry the opposite side of the cap from the roll pin until the cap shears the roll pin. Another possible way is to use a Dremel tool to cut the area around the roll pin. Once enough material is removed the roll pin can be pulled out. Once again, this procedure is not recommended. You could go to the dealer and get a randomly coded version and key the rest of the car to the new ignition cylinder.

The ignition cylinder contains tumblers in position 1 through 10. *(see Photograph 4).*

4. A disassembled ignition lock.

Door Lock

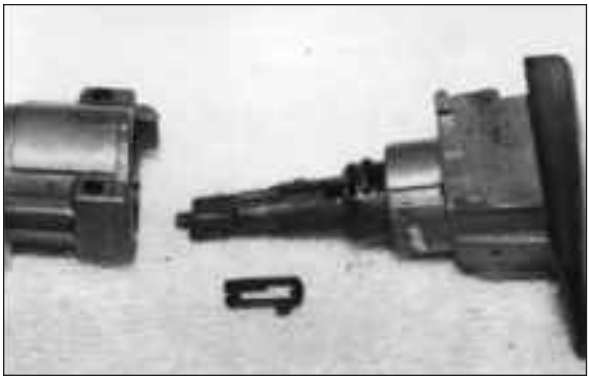
The door cylinder and the handle appear to be a one piece unit. The cylinder can be separated by opening the door and removing the small black plastic cap, located on the side of the door body near the handle. Inside that hole is a 4mm Allen screw. Remove the screw. Since this car is equipped with a factory alarm you must uncouple the alarm connection. To do this remove the large black plastic cap located above the Allen screw hole and separate the connectors.

To remove the cylinder, insert the working key and rotate to gently remove the cylinder. This will take a little pulling, back and forth as the cylinder is held tightly in place with the handle assembly. Remember to take your time and be gentle with the removal of the cylinder. *(see Photograph 5)*.

5. Removing the handle to retrieve the door lock.

The tailpiece of the door cylinder has a wing tip on it that fits into a plastic cam that works with the latching assembly. Because of the opening in the cam, the wing tip of the tailpiece is interlocked into the cam. That is why it is necessary to rotate the cylinder with the key in order to remove the door cylinder.

The door cylinder has an alarm switch connection on it. To disassemble the cylinder, insert the key into the cylinder. Remove the two tension roll pins by tapping



6. Removing the door lock from the handle.

them through the lock housing with a pin punch. Separate the front section of the housing from the rear section. Rotate the key to remove the plug from the forward section of the housing. The door cylinder contains tumblers in positions 2 through 13 *(see Photograph 6).*

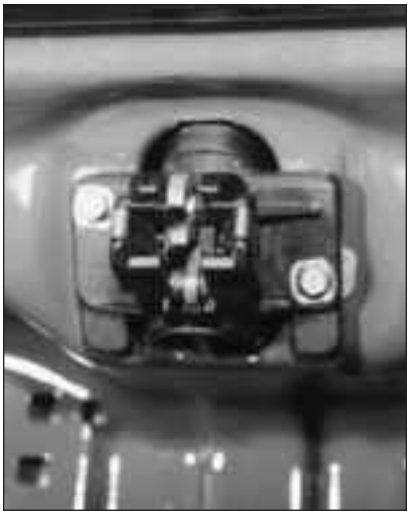
Trunk Lock

Most Mercedes trunk locks are located in body of the trunk panel, whereas on the 190E the trunk lock is in the deck lid itself and is held in place by two 10mm bolts. Remove the bolts and then disconnect the linkage rod by unscrewing the Phillips screw that holds it in place *(see Photograph 7).*

To recode the cylinder you must remove the front plastic trim section of the lock housing by gently prying it apart. Next, remove the E-clip on the back of the lock. Be careful as the lock cylinder is under spring pressure. The lock cylinder will now slide out. Insert the working key and rotate it to remove the plug. Be careful as there is a small spring and ball-bearing that may fly out. The trunk cylinder contains tumblers in positions 1 through 12 *(see Photograph 8).*

Glove Box Lock

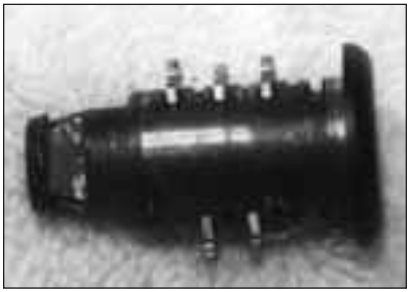
To remove the glove box lock cylinder it is necessary to remove



7. The 190E trunk lock is held in by two 10mm bolts.

8. The disassembled trunk lock.

9. The glove box lock is made of plastic and is extremely fragile, and must be removed for lock disassembly.



10. The glove box plug.

the cam on the back side of the cylinder plug. The cam is made of plastic and has four small brittle posts that hold the plug in place. *(see Photograph 9).*

It will be necessary to use small pieces of metal (like lock picking tension tools) to gently wedge between the posts and then slide the plug out. The posts can break easily, so take extreme caution when wedging them. The glove box lock plug contains five tumblers in positions four through eight *(see Photograph 10).*

NOTES

The 1996 Dodge Stratus

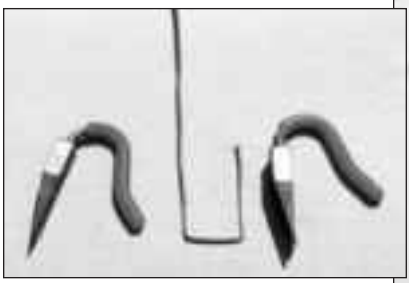
by Michael Hyde

This month we take a look at the 1996 Dodge Stratus. The Stratus uses the standard Chrysler keyway and tumblers found on almost all the late model Chrysler products.

1. The 1996 Dodge Stratus.

Opening

This car is equipped with vertical linkage. To open the car use an "under the button tool" or a slide linkage tool to bind the rod and move it upward to unlock the car. It would help to use a couple of wedges *(see Photograph 2).*



2. Use wedges and an under the button tool to open the vehicle.

Ignition

To service/remove the ignition lock, it is not as simple as it looks. The ignition lock is encased in a standard two-piece plastic shroud, also referred to as the "clam-shell" *(see Photograph 3).*

To remove the ignition lock, it will be necessary to remove the side access fuse panel, the heating and radio control trim bracket, the large plastic dash trim piece that fits over the dash, the drivers side knee-bolster (lower section of dash, below column), and the steering column two-piece plastic shroud.

I will guide you through this process that sounds harder than it really is.

The first step is to remove the side access fuse panel. That is done by unsnapping the cover *(see Photograph 4).*

3. Note the shroud around the ignition.

4. Unsnap the cover.

5. Remove the phillips head screw.

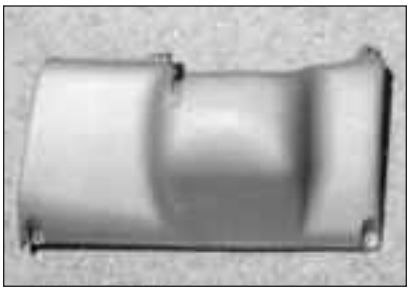
6. Unsnap the bracket from the dash.

7. Remove the four phillips head screws.

8. Unsnap the large plastic dash trim.

9. Remove yet two more screws.

10. Close-up of the knee bolster.



11. The lower screw holes on the bolster.

12. Now you can reach the three shroud screws.

13. Unsnap the trim ring and move it aside.

Once you remove the panel, remove the phillips-head screw as seen in *Photograph 5.*

Next, remove the heating and radio control trim bracket. The bracket unsnaps from the dash *(see Photograph 6).*

Now that you have the trim bracket removed it will be necessary to remove the four phillips-head screws that hold part of the large plastic dash trim *(see Photograph 7).*

The next step is to unsnap the large plastic dash trim piece. To do this, grasp the top part of it in the back edge near the windshield, that is above the instrument panel and gently pull outward with steady but careful pressure. You should feel the snaps as they unsnap one after another *(see Photograph 8).*

Next, remove the two phillips head screws on the left upper section of the knee-bolster *(see Photograph 9).*

Now remove the one phillips-head screw on the right side of the knee bolster *(see Photograph 10).*

Remove the last two phillips-head screws on the lower section of the

14. Probe for the retainer.

15. Pull the ignition cylinder out.

16. Depress the detent roll pin.

17. The ignition plug contains all seven tumblers.

knee-bolster. The knee-bolster is pictured *(see Photograph 11).*

Finally, you can now remove the three column shroud trim piece screws. The phillips-head screw hidden by the knee-bolster is pictured by the placement of our screwdriver *(see Photograph 12).*

The ignition cylinder has an illuminated trim ring that sits on the front of the lock cylinder. You must unsnap it and push it out of the way *(see Photograph 13).*

Insert the working key and rotate the lock clockwise to the "ON" position and then insert a probe to depress the active retainer to release the ignition cylinder *(see Photograph 14).*

The ignition cylinder is now removed from the column *(see Photograph 15).*

To disassemble the cylinder you must insert the working key and rotate the cylinder counter-clockwise to the accessory position. Depressing the detent roll pin will allow you rotate the cylinder farther and then you can slide the plug out *(see Photograph 16).*

The ignition plug contains all seven tumblers. The ignition plug also has a small detent activator, that is not pictured, this activator must be in the plug when you re-assemble the lock. The car will not start without the activator *(see*

The 1996 Dodge Caravan

by Michael Hyde

By now, some of you think I make a commission off of each EEZ-Reader sold. I have written other articles about this type of tool in the past. Let me guarantee that I do not make anything off this tool. Not one penny (wish I did.) What I am trying to do is educate you about making keys to cars in the most efficient and productive way possible. It makes good business sense to get the job done as fast as possible so you can get to the next call sooner. We are in business to make money, are we not? You can not spend hours on a car and be making money, unless you are well paid for each one of those hours!

The 1996 Dodge Caravan is one of the all-time top sellers in its class *(see Photograph 1).* Lets go down the line and see what our options are to make a key when no codes are available:

1. The 1996 Dodge Caravan.

Impressioning

Have you seen some of the tumblers that are being used in locks today? When you leave a brand new car after impressioning a key to it, are you absolutely sure that you didn't tweak any tumblers during the process? After making a key to the car, do you then code out a key to give to the customer? Shouldn't the owner of a brand new car have a key made to factory specs?

Removal Of Door Lock

Taking out the door lock is a time-consuming process. Some new door panels slide up and then off. Almost all of them have those "hidden screws." How long does it take to remove a door lock from a 1996 Dodge Caravan, decode the lock, and then re-install everything. There is a lot of wiring in the doors. What are you charging to do this?

Drilling

Drilling what? You're not going to drill out the ignition on this van, just because they don't have a key, are you? I have seen it done just to "get the customer on the road." Any type of work done on the steering column of a car or truck is serious business. The column and lock had better be just like the dealer or factory would have done it or you could be charged with criminal negligence, and be liable for all damages and attorney fees. You think I'm kidding? A locksmith in my area did what some of us would call a "hack job" and the steering wheel locked-up on the customer who was on the freeway. This was after the "locksmith" got the customer on the road. Remember there is always a right way and a wrong way.

EEZ-Reader

The fastest and easiest way to make a key would be to use a tool called the "EEZ-Reader" sold by H.E. Mitchell Co. In the following article I will show you how.

The EEZ-Reader is designed in two parts. One part is the key tool made from a particular key blank. The other is a slide-tool made from a flat spring steel.

The key tool is milled to fit with the slide tool. The tip of the key tool has a slot in it to trap each wafer individually.

The slot at the tip end is wider than the wafer. You need inward pressure on the key tool to hold the wafer snug to that side of the slot. Also, inward pressure will help hold the wafer in place for a touch stop while using the slide tool to determine the depth of that particular wafer.

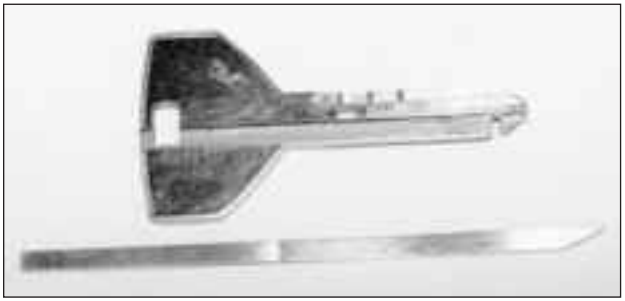
To use, put the slide onto the key so the slot is covered and then insert entire unit (key & slide) into the lock. Ease the slide out to allow the wafer to settle in the slot of the key tool. You may want to move the key tool around a little bit to insure that the wafer is in the slot completely.

Apply and hold moderate inward pressure on the key tool. Hold the slide tool with your fingertips lightly and insert the slide tool in until it just touches the wafer. You will feel a distinct stop, but if you press too hard, you will raise the wafer. Line up the mark on the slide with the corresponding depth mark on the key-tool to obtain your tumbler depth *(see Photograph 2).*

I have enlisted the help of Robert Johnston (from Johnston Lock) to assist in demonstrating this tool. Robert has inserted the tool and is now reading the depths *(see Photograph 3).*

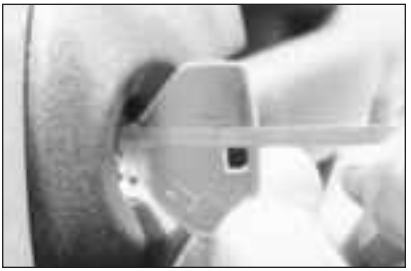
The actual reading of the tumblers in the door lock *(see Photograph 4).*

Robert read the depths for even spaced tumblers in positions 6 - 4 -



2. Line up the mark on the slide with the corresponding

3. Insert the tool and reading the depths indications.



4. The actual reading of the tumblers in the door lock.

5. Once the cuts are assembled, a key can then be cut using the tool of your choice.

6. A new operating key is quickly and easily produced.

2, while holding the tool facing the front of the van. Remember, you are reading the depths from the back of the lock to the front (tip to bow.) Since this is a double sided lock, you then need to remove the tool and inserted it back into the lock with the tool facing the rear of the van. Then read the depths for the odd spaced tumblers in positions 7 - 5 - 3 - 1.

The cuts are then combined to make a key, remember the cuts are decoded from the tip to the bow. On a 1996 Caravan all the cuts necessary for a complete key are found in the door locks.

Once the cuts are assembled, a key can then be cut using the tool of your choice *(see Photograph 5).*

The new working key is being inserted into the van *(see Photograph 6).*

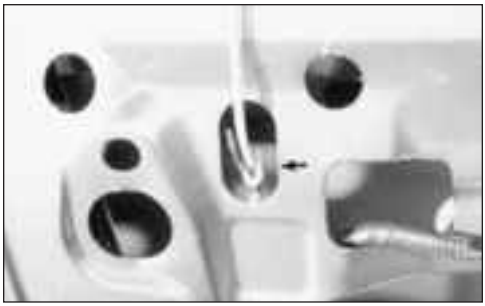
It is easy to make keys to 1990 & up Chrysler products using the EEZ-Reader. You could easily do several cars an hour using this tool. We did not need to unlock the van to make the key, everything was done from outside the van. Why would you want to pull an ignition lock or door panel to make a first key when you can do it the EEZ way.

For more information on the EEZ-Reader call H.E. Mitchell at: (503) 236-9444.

The 1996 Mercury Sable

by Michael Hyde

1. This time out we take a look at the 1996 Mercury Sable LS. This model is equipped with the new Ford 8-Cut Transponder System also called P.A.T.S. (Passive Anti-Theft System.) The 1996 Mercury Sable LS and the 1996 Ford Taurus LX models are equipped with not only the new Ford 8-Cut system but with Transponders also. These models are very popular with the rental car companies and it is important to know how to service them correctly.



2. To open the car is pretty easy, since the linkage is vertical and exposed. Use a good light if needed, and a vertical slide linkage tool to grasp the rod and pull upwards to unlock the door.

3. Servicing the ignition is the same whether equipped with or without a transponder. To remove the ignition cylinder, simply insert a working key and rotate it clockwise to the first accessory position. Now insert a probe into the access hole in the plastic steering column shroud to depress the active retainer and slide the cylinder out of the column.

4. The ignition cylinder is removed and can now be serviced.

5. To disassemble the ignition cylinder, insert a working key and rotate the cylinder clockwise as far as it will turn. Once rotated, use a small probe to depress the ball bearing in the rear of the lock. Once the ball bearing is depressed you will be able to rotate the cylinder even farther and then slide the cylinder plug out. The ball bearing will eject into the cavity the active retainer occupies.

6. The ignition cylinder plug contains seven wafer tumblers in positions 2 through 8 and also incorporates a sidebar.

7. When servicing the ignition lock be careful not to let the buzzer activator drop out. Strattec replacement part number for an ignition service package is 703370. The tumblers for the ignition can be found in the Strattec Ford 8-cut Pinning Kit 703373.

8. To access the door lock on this vehicle, the door panel must be removed. Removing the door panel however, is also a breeze.

9. First remove the screw cap located down in the door pull cavity and then remove the phillips-head screw.

10. Next remove the plastic trim piece behind the inside door release lever. Use a small screwdriver to gently unsnap it from the top. Tilt the trim cover forward from the top and lift it out of the panel.

11. Now you can gently unsnap the door panel and remove it. That's right, the panel is only held to the door by one screw and some standard push-in type panel fasteners. You do not have to lift up on the panel to remove because it does not interlock into the window channel. Once the trim panel is removed, you can roll back the inner air barrier and service the lock.

12. Now you can gently unsnap the door panel and remove it. That's right, the panel is only held to the door by one screw and some standard push-in type panel fasteners. You do not have to lift up on the panel to remove because it does not interlock into the window channel. Once the trim panel is removed, you can roll back the inner air barrier and service the lock.

13. The door lock cylinder is held to the door by the standard horseshoe style clip. You must first remove the two 8mm bolts that hold the handle in place (a 5/16" socket will also work.) Lift the bottom portion of the handle outward to gain easier access to the clip and then slide the clip towards the front of the car to remove it. The lock cylinder can now be separated from the linkage rod.

14. Next, instead of trying to remove all the wiring with the lock, just remove the "E" style retaining clip on the back of the lock to separate it from the wired switch. Be sure to mark the wired switch and the lock to know where to line it up correctly.

15. The door lock cylinder contains six tumblers in positions 1 through 6. In the door lock cylinder pictured, note that all six tumblers can be seen from the drainage hole.

16. To remove the cylinder from the housing, it is necessary to rock the tumbler back and forth. The door lock has a detent that is located in the housing. This detent is new for domestic Ford products. Strattec replacement part number for a door lock service package is 703162. Replacement face-cap part number from Strattec is 322672. The tumblers for the door can be found in the Strattec Ford 8-cut Pinning Kit 703373.

17. One good thing about the trunk lock is you do not have to remove the tail lights to get to it like on some other vehicles.

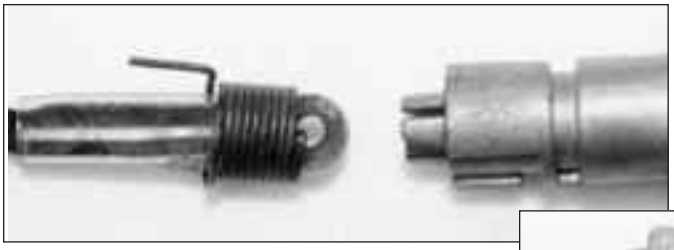
18. There are two retaining clips that hold the trunk lock to the deck lid. To remove the first retaining clip you must drill out the two aluminum rivets that hold it. The clip will now slide out. At this point you can also see all the tumblers in the lock through the drain hole. The next step is to remove the plastic trim piece that covers the latch assembly. It is held on with three plastic screw fasteners.

19. With the trim piece removed, you can now remove the latch assembly, it is held on to the deck lid by three 8mm bolts.

20. Once the latch is removed you will find the second lock retainer. It will be necessary to remove the rivets that secure it in place. Start out with a small drill bit, like a 3/32", and then increase in size until the rivet comes out. After the second lock retainer is removed the trunk cylinder can be easily slid out of the deck lid.

21. The trunk lock can now be serviced.

22. To disassemble the trunk lock, you must first remove the face-cap. Insert a working key and rotate the plug until it slides out of the cylinder housing. The lock cylinder is warded, so only a working key will allow the cylinder plug to rotate to the correct position for disassembly. The cylinder plug contains tumblers in positions 3 through 8. To remove or insert a tumbler it will be necessary to rock the tumbler back and forth.

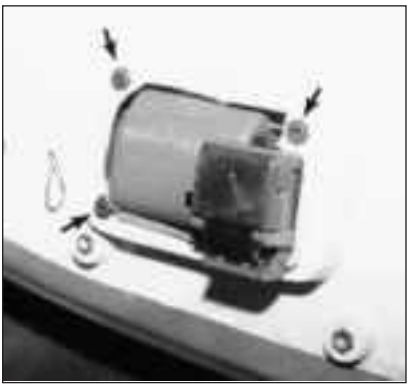


23. Note the way the tailpiece and tailpiece spring fit together and attach to the cylinder plug. There is an opening for the spring and tailpiece, it can only go on one way, correctly. The other end of the spring rests up against notch a in the cylinder housing.

24. After you reinstall the trunk lock cylinder, you should secure the lock cylinder retainer with a sheet metal screw as it will be difficult to find a rivet as large as the one you drilled out. Strattec replacement part number for a trunk lock service package is 703365. Replacement face-cap part number from Strattec is 322534. The tumblers for the trunk can be found in the Strattec Ford 8-cut Pinning Kit 703373.

25. The glove box lock is pictured. The lock can also be referred to as a "Stowage Lock" .

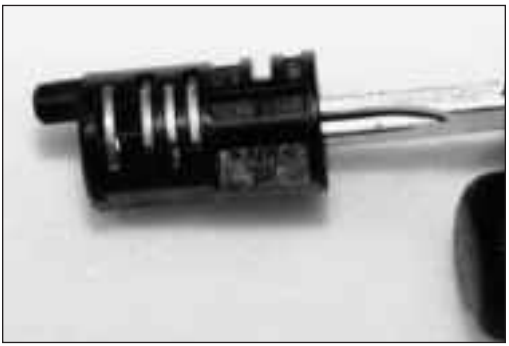
26. To remove the glove box lock you will need to disconnect the spring loaded retainer string located on the right side of the glove box door. To lower the glove box door to gain access to all the screws, push inward on both sides of the compartment portion of the door to allow the stop posts to pass the dash cut-out.



27. Next remove the eight phillips-head screws on the inside of the glove box door. Once you have removed the eight screws, lift off the glove box door and remove the three remaining screws holding on the lock assembly.

28. Insert a working key and then depress the active wafer retainer on the rear of the lock housing to slide the cylinder plug out.

29. The glove box cylinder plug contains three tumblers in positions 6 through 8. The tumbler at the rear of the plug is the active retainer tumbler. The plug is made of plastic. Strattec replacement part number for a Glove Box cylinder plug is 381231. The tumblers for the glove box can be found in the Strattec Ford 8-cut Pinning Kit 703373.



Making First Key:

To make a first key there are two steps, first you must make a mechanical key and then program in the new PATS transponder code.

Step One: Making Mechanical Key.

Method One: Use EEZ-Reader (Sold by H.E. Mitchell Co.)in door lock to determine cuts in positions 1 through 6, then progress the two remaining cuts in the ignition, for positions 7 & 8. Or, impression the remaining two cuts in the trunk lock.

Method Two: Press trunk release button to open trunk. Remove only the first trunk cylinder retaining clip by drilling out the two aluminum rivets. Once the clip is removed you can then see all the tumblers in the lock through the drainage opening. Insert a blank and 'read' the tumbler depths. Progress the two remaining cuts in the ignition, for positions 7 & 8. Or, impression the remaining two cuts in the trunk lock.

Step Two: Programming Replacement Keys Transponder. (No other working key for car is available.)

Step One: Put the newly cut key into the keyway and turn it to the ON (RUN) position. A theft indicator light on the dashboard will flash for 15 minutes.

Step Two: Within 5 minutes after the indicator light stops flashing, turn the ignition to OFF, then return to the ON (RUN) position. The indicator light again will flash for 15 minutes.

Step Three: Again, within 5 minutes after the indicator light stops flashing, turn the ignition to OFF, then return to the ON (RUN)

position. The indicator light again will flash for 15 minutes. When the light stops flashing for the third time, the new key is programmed into the computer and will start the car. All previously stored codes will be erased. To stop the process at any time, simply remove the key and use an existing key to start the car.

For Cars Where You Want to Create a Spare Key

As many as 16 keys, each with its own individual electronic code, can be programmed into the computer for a vehicle equipped with PATS. The system will ignore attempts to enter a 17th code. If a key is already programmed into the computer is available, programming another key only takes seconds.

1. Place an already programmed key in the keyway. Cycle the ignition from OFF to ON (RUN) to OFF.

2. Within 15 seconds, insert the new, properly cut PATS key in the ignition. Turn the key to ON (RUN) or START. The theft indicator light will go on for two seconds, after which the key will start the vehicle.

3. Repeat the second step for each new key to be programmed.

4. If the light flashes for 15 minutes, too much time elapsed between cycling of the already programmed key and the new key. If this happens, simply start over. If the light flashes for 1 minute, the new key is defective or is not a PATS key. Start again with a different key. To stop the process at any time, simply remove the key and use the pre-existing key to start the car.

5. To remove any key code from the system, erase all stored codes using the pro-gramming mode and re-enter the desired spare keys.

Code Series: *Ford 8-Cut, 0001X-1706X*
Key Blank: *Ilco H72-PT, Silca FO38RT3, Curtis H72-PT*
M.A.C.S. *2*
First cut: *.405*
Framon: *Use spacing clip, align tip of key with left side of vise. Lay clip FLAT on left side of vise and slide key in from right.*
Cut to Cut: *.092*
Depths: *1=.354, 2=.329, 3=.304, 4=.279,5=.254*

NOTES

The 1996 Mercury Tracer

by Hankman

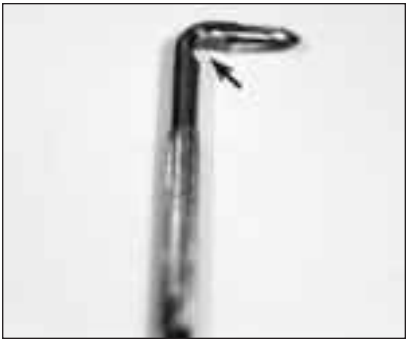
1. In 1991 through 1995, the Ford Escort and the Mercury Tracer both used the Ford 10 cut codes and keys. In 1996, the Mercury Tracer changed. The Escort, Aspire, and the Tracer are all built in Korea by Kia Motor Co.

2. The center section of the shroud does not have to be removed as I did here, you can access the screw with the rubber cover in place. This cut out is if the car has a tilt wheel. If it did, a pull lever would be here rather than a rubber insert.

3. Remove the screws from the shroud and you can remove the top and bottom parts of the shroud.

4. The bottom arrow on the right shows one of the roll pins which holds the key cylinder in the lock. You will need to cut behind these pins and pry them out to remove the cylinder. The black arrow on the top right and the white arrow on the top left show location of two phillips screws that must be removed if you are removing the lock from the column. This car has two air bags, do not work on this ignition lock without first disconnecting the battery.

5. To remove the two screws in photograph 4, I use an off-set screw driver. The one shown by the white arrow is down in a hole. I used a cone grinding wheel with a Dremel tool and cut away part of the off-set driver as shown, this gave me the length on the driver to reach in the hole and remove the screw.



6. These two arrows show the location of the two shear head bolts holding the lock on the column. They are not the easiest to get at, however with a little patience it can be done.

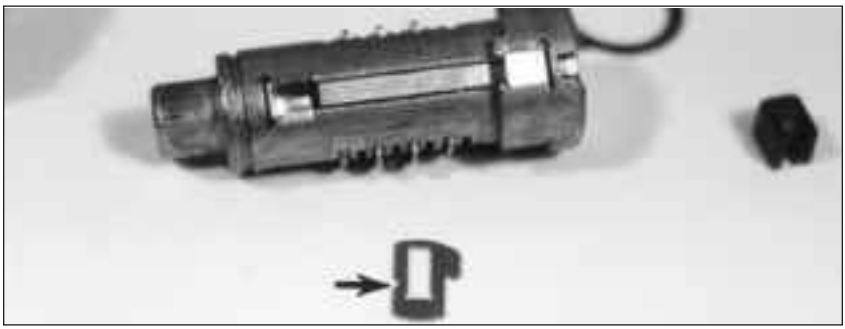
7. With the lock removed you can see two of the roll pins pulled up. The arrow shows where the transmission cable hooks on to the lock.

8. With the roll pins removed the key cylinder will come out the front.

9. This is the key cylinder removed, be careful of the spring in the center of the plug. This lock is spring loaded and must be pushed in to turn it from off to the lock position. The key can only be removed in the lock position.

10. Remove the tru-arc ring from the rear of the plug.

11. The plug will now come out the front, be careful of the black buzzer piece, it will fall out and it must be in the plug when you put it back together.



12. This plug has a long side bar in it and it is also a double sided plug with eight tumblers, four on one side and four on the other side. These tumblers have a notch on the side for the side bar. There are ten cuts in the key and what you have in the ignition is the #1 through the #8.

13. The door lock cylinder is on the outside door panel behind the door handle.

14. To remove the lock cylinder you must first remove the inside door trim panel. This panel is not hard to remove.

15. Remove the inside window handle using your clip removal tool shown.

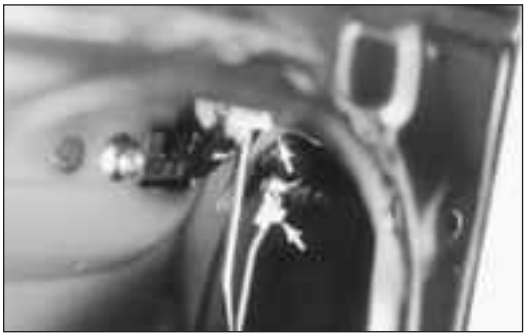
16. Remove the screw holding the inside door handle and the trim.

17. Disconnect the linkage rod from the door handle and remove the handle and the trim., it is one unit.

18. Remove the two screws from the arm rest shown by the black arrows. Now use your panel clip tool, white arrow, and pry the panel off down both sides and the bottom.

19. This is the plastic weather cover. Start at the top right corner and pull it back down the right side and across the top.

20. Shows there is a vertical locking rod and it is wide open. I am using a Slim Jim to get on the rod and lift it up to open the door. There are several other tools that can be used to lift the rod, whatever is the easiest for you.



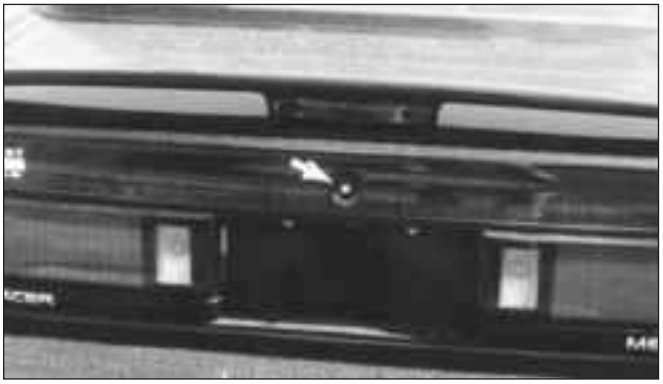
21. The top arrow shows a horse shoe clip holding the lock cylinder on the car. The bottom arrow shows the linkage rod hooked to the back of the lock cylinder. Disconnect the linkage rod and pull the clip up, the cylinder will now come out the front.

22. This is the lock cylinder removed. There is a window in the bottom of the case and all the tumblers can be read through it to make a key.

23. Remove the "E" clip from the back and the tailpiece. Then remove the face cap from the front of the cylinder.

24. The plug will now come out the front.

25. This plug does not have a side bar, it is double sided with eight tumblers. The eight tumblers in this lock are the #3 through #10, it does not have the #1 & #2 which are in the ignition, therefore when making a key from this lock cylinder you will have to either impression the #1 & #2 or progress them to have a key which will work all the lock cylinders on the car.



26- The trunk lock cylinder is located in the center of the trunk lid.

27. There is no trim cover on the inside of the trunk lid, it is wide open and the lock cylinder is very easy to remove. There is a long horse shoe clip holding the cylinder in, remove the clip.

28. Disconnect the linkage rod shown and the lock cylinder will come out the front.

29. The trunk cylinder also has a window in the bottom of the case and it comes apart the same as the door cylinder.

30. This plug is the same as the door plug. It is double sided and has the same eight tumblers #3 through #10.

NOTE: *The early 1996 Ford Escort features the same locks and specification as the 1995 locks. The late 1996 Escort will feature the same locks as the 1996 Mercury Tracer. Be aware of this mid-year change on the Escort.*

Code Series: *10100-12283*
Key Blanks:
Curtis: *H65*
Ilco: *X221, H65*
Silca: *FO31R*
Number Of Cuts: *10*
Number Of Depths: *5*
Starting Cut: *.098*
Cut to Cut: *.0825*
Spacing: *1-.098, 2-,181, 3-264, 4-.347, 5-.430, 6-.513, 7-.595, 8-.677, 9-.761, 10-.844*
Depths: *1-.315, 2-.299, 3-.283, 4-.268, 5-.252*
HPC Code Card: *CF68*
Curtis Cam: *MZ5*
Curtis Carriage: *MZ5A*
Framon: *Block #5*

The 1995 Kia Sportage 4x4

by Hankman

The Korean built Kia Sportage 4X4 is a sporty little vehicle that is quite simple to service and easy to open in the event of a lockout.

1. The Kia cars are built by Kia Motors, a Korean car company. The first of these cars came into the USA in 1994, However, Ford and Mazda both own a percentage of Kia Motors and have been building both the Ford Escort and the Mercury Tracer since around 1991.

Ignition

2. The ignition lock is on the column and is covered by a plastic shroud.

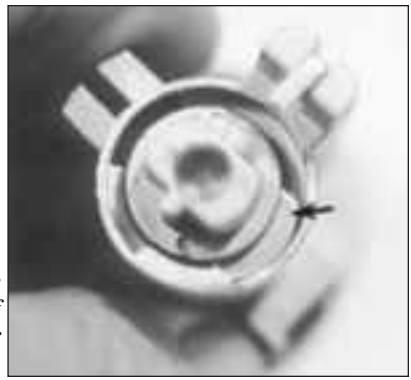
3. Remove the Phillips screws from the bottom of the shroud and remove it.

4. The key cylinder is held in the lock by two hollow roll pins. If you use a Dremel tool with a cut off wheel, cut a slot beside these pins and then pry them out. You can now remove the key cylinder without removing the whole lock.

5. If you need to remove the whole lock from the column, go to the back of the lock and remove the electrical switch by removing the one Phillips screw seen here which holds the switch on.

6. The lock is held on the column by the two shearhead bolts shown. Punch them around counter clockwise and remove the bolts and the lock.

7. This is the key cylinder removed from the lock.



8. The retainer which holds the plug in the case is at the rear of the plug. Depress this retainer and push the plug out the front.

9. With the plug removed you can see there are seven tumblers plus the retainer at the rear of the plug.

10. With the key removed you can see the ignition is double sided with four tumblers on one side and three on the other side. With the retainer removed you can see that it is a full retainer (all the way around) Photograph 11, will show the advantage to this.

11. Take a hook and go all the way to the rear of the plug, hook the retainer and pull it down and pull the plug forward enough to hold the retainer down. Now bring your pick forward and pick the #1 tumbler down and pull the plug forward, then pick the #2 tumbler down and pull forward. Continue with #3, #4, etc., until you have walked the plug out. Here's two hints; if you can first pick the lock to the ACC position it will retract easier. If you cannot pick it, you may need to keep working the buzzer bar up off the tumblers as it comes out. If you can remove the buzzer unit from the lock, by all means do it.

Door Lock

12. The door lock cylinder is located in the outside door handle. You will have to remove the inside door trim panel to remove it.

13. Remove the one Phillips screw on the bottom of the panel.

14. Next remove the screw from the inside door handle.

15. Disconnect the linkage clip at the rear of the handle and remove the handle.

16. There is one screw at the bottom of the inside pull handle with a trim cover over it. Pop the cover off and remove the screw.

17. There is a plastic trim cover at the top front portion of the panel. It just snaps off, be careful not to break it.

18. The door panel will now pry off, it will come off very easy.

19. To remove the inside plastic weather cover, start at the top right corner and pull it back across the top and down the right side.

20. The black arrow on the right shows the linkage rod hooked to the pawl, disconnect it. The white arrow on the left shows the spring wire retainer

21. The lock cylinder will now come out the back. There is no need to remove the whole door handle, this panel and door is very easy to work on.

22. Once the lock cylinder was removed, this vehicle did not have a code number on it. I would assume that the only place to find the code is on the metal tag that comes with the key.

23. There is a horseshoe type clip holding the tailpiece on, remove the clip and the tailpiece.

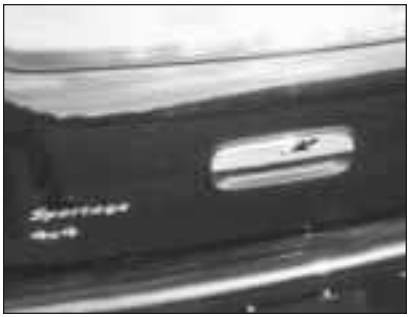
24. The face cap is staked on at two positions, lift up on the stakes with a small screw driver and remove the cap. You will reuse it.

25. With the face cap removed, notice the dust cover and spring, this is the old Toyota type.

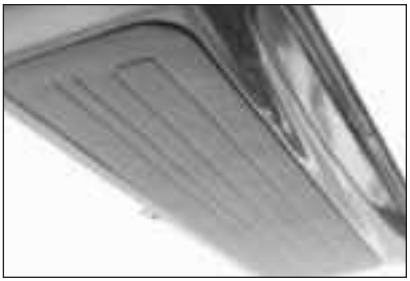
26. The plug will now come out the front. This plug has all seven tumblers just as the ignition cylinder. The difference being this plug is not double sided, these seven tumblers are all in a line on one side.

27. The tumblers do have the depth number stamped on them, however the numbering is reverse from our system. The #4 depth equals our #1 depth, the #3 equals our #2, the #2 equals our #3, and the #1 equals our #4.

Tailgate Lock



28. The tailgate lock cylinder is in the handle as seen here, however it is easy to get out.



29. Remove the inside trim panel simply by prying it off.

30. Pull the inside plastic weather cover back over half way across, the lock cylinder is in the middle.

31. You can see that as soon as the weather cover is pulled back, the lock cavity is wide open.

32. Snap the linkage open as seen in this photograph.

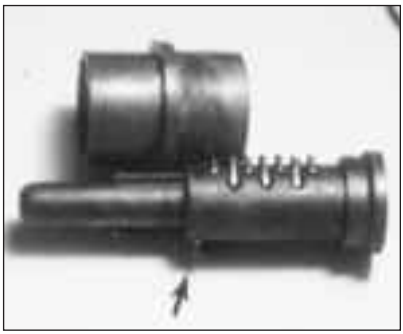
33. Remove the spring clip shown and pull the lock out.

34. To disassemble the cylinder, first remove the tru-arc clip shown here. Hold your hand over it, there is a large heavy spring under the metal plate.

35. The plug and case will now come out the back, you can see the large spring in this photograph.

36. The face cap is peaned over all the way around, however it is not hard to work it up and it will not show when the complete cylinder is back together.

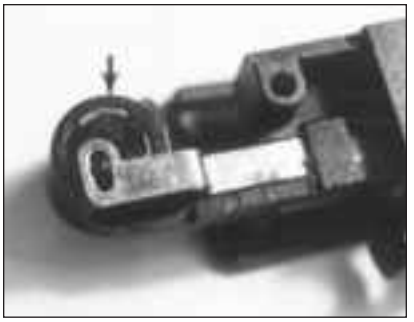
37. The retainer which holds the plug is located at the rear of the plug. Depress the retainer and push the plug out the front.



38. This plug is the same as the door plug, it has all seven tumblers in it and is single sided with all tumblers in a line. The arrow shows the location of the retainer.

Glove Box Lock

39. The glove box is a very straight forward procedure. Open the door and remove the two screws and remove the lock.

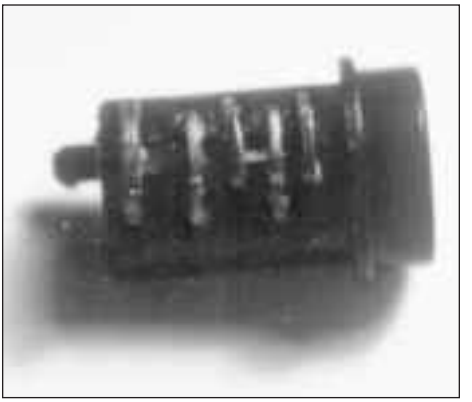


40. Look at the back of the lock and you will see the retainer which holds the plug in. Depress the retainer and push the plug out the front.

Code Series: *Y7001-Y8200*
Key blank: *X233*
HPC1200 Card: *CF301*
Curtis Cam: *KK1*
Carriage: *KK1A*
Spacing: *#1-.098, #2- .197, #3-.295, #4- .393, #5- .492, #6-.591, #7-.709*
Depths: *#1- .284, #2- .264, #3- .244, #4-.224*

**** Remember if reading depths from the stamped tumblers, reverse them for the above depths.***

41. This glove box lock contains the last four tumblers only. If you have problems impressioning the door or ignition lock, you might try pulling the glove box lock out and getting these four cuts, then you will only need to impression the first three. Your Auto Security Products distributor has these lock cylinders available. To open this vehicle, all that is needed is a Slim Jim, it has a vertical button and the rod is wide open. All in all, this vehicle reminds me of the gravy days of the 70s and early 80s.



NOTES

The 1995 Saturn

by Tom Mazzone

Saturn's ignition lock for its 1995 models seems to have undergone some very subtle changes to the unsuspecting locksmith. They are, however, enough to turn the air blue with frustration if serviced without the proper technical information. The locks and keys for the Saturn are produced by All-Lock, and locks and service parts are available from All-Lock distributors.

The blade of the 1995 Saturn key is now .070" longer than its predecessor and is still a tip-stop type key (All-Lock #94ST). At first glance, the change in the key blank dimension is not readily visible. However, if the blanks are laid side by side, the length difference is easily seen. The factory index notch found on the edge of the blade is one full cut space toward the bow of the key. This change was made because the bows of the previous, shorter blanks had a tendency to rub on the ignition bezel while turning *(see Photograph 1)*.

A more important change, however, is tumbler placement on the ignition. In years past, wafers 1 through 6 were present in the ignition cylinder. For the 1995 ignitions all seven wafers are in the ignition plug (All-Lock ignition #1359) *(see Photograph 2)*. This is an especially important point to

1. The newer Saturn key has an identical keyway and cutting specifications but is .070" longer.

2. The 1995 Saturn ignition (left) has all seven tumblers as opposed to the six held by its predecessor (right).

3. Appearances are deceiving. While these two locks look similar, the 1995 version (left) holds a few subtle and important differences.

4. The 1995 ignition (left) has a much larger cylinder retaining pin than the older version.

5. Also, this lug is present on the new ignition (left) and not the older.

remember if generating a first key by impression. If the locksmith continues impres-sioning using old information, he may overlook the seventh space, foiling the impressioning attempt. It should be noted that no changes were made to the door and deck lid locks. Door locks have tumblers in positions 2 through 6. Deck lid locks have tumblers in positions 3 through 7.

While the outward appearance of the post-1995 and 1995 ignition cylinders seem identical, change is evident in the size of the cylinder retainer pin on the 1995 ignition lock *(see Photographs 3 and 4).* The newer version is almost twice the size of the earlier model. There is also a cast lug on the back of lock cylinder plug, approximately 11/32" from the end *(see Photograph 5).* This makes plug removal, for rekeying and servicing, similar but not identical to the older style ignition.

To remove the plug, gently remove the plastic bezel from the lock cylinder. Use a key or shim and pick the lock to turn the plug until the plug retaining pin comes to rest against the plug stop. Use a small screw driver to depress the pin while rotating the plug to align the pin with the clearing in the cylinder. Be careful. This pin is spring loaded and is easily lost. Once the pin is in the clearing, remove it *(see Photograph 6).*

Continue to turn the plug until the lug on the back of the plug aligns with the cylinder broaching found at the clearing used to release the plug retainer. Once aligned, slip the plug out the front of the cylinder *(see Photograph 7).*

It should also be noted that despite very similar appearances, the newer and older style locks are not interchangeable.

Ignition lock removal is fairly straight forward and identical to previous year's models. Having both

6. Depress the plug retainer and turn the plug until it enters the clearing. Carefully remove the retainer.

driver and passenger side airbags, always disconnect the battery cables before servicing, negative side first. Remove the five 1/4" screws holding the two-piece clam shell shroud together. Two of these screws are deeply recessed into the lower shroud. A thin wall 1/4" socket must be used to remove these bolts easily. If your socket is too thick, put a 1/4" drive ratchet extension on the socket and carefully thin the outside diameter of the socket on a grinder. The extension will help you hold the socket steadily as well as keep the heat away from your hands.

Remove the shrouds and set them aside in a safe place. Locate the lock cylinder retaining pin that holds the lock in the steering column. The retaining pin can be easily located by projecting an imaginary line through the lock immediately left of the word START on the face cap.

Pick the lock to ACC, depress the pin and remove the lock. The face cap does not need to be removed at any time during this procedure.

If face cap removal should become necessary (i.e. rekeying) care must be taken as the face cap's plastic retaining tabs can be damaged if brute force and tactics are sued.

Aside from impressioning, tryout keys are also a realistic option in fitting a first key. Keep in mind that the more wafers in a lock cylinder, the greater the likelihood for failure. Previously, with six wafers in the ignition, a tryout key needed only to work within the tolerances of the lock and six wafers. With the seventh wafer present, however, the security is increased; much like trying to pick a five pin cylinder versus a six pin cylinder.

7. Continue turning the plug until the lug aligns with the broaching. Remove the plug out the front of the cylinder.

According to David Parrott of Aero Lock, manufacturer of automotive tryout and depth keys, on pre-1995 Saturns only 32 keys (set TO48) were needed to produce a tryout set for the door and ignition lock. With the added tumbler in the 1995 ignition the tryout set now jumps to 128 keys (set TO79). This shouldn't scare locksmiths off, however. Parrott points out that despite the larger number of keys, it only takes a maximum of 36 tries for finding a door and ignition lock key.

As an alternative to the larger set, because the door locks are the same for 1995, the smaller set of tryout keys can be used to determine the door bitting. After this has been found, tumbler position 7 can be progressioned from the trunk and then tumbler position 1 progressioned from the ignition.

If tryout keys aren't your thing, reading the door lock either by sight or using H.E. Mitchell's EEZ Reader for Saturn (EEZ-B76) is a viable option. After reading the tumblers in the door lock, progression for positions 7 and 1 as listed above.

As a final key fitting alternative, the ignition lock can be picked and removed.

Aero Lock can be contacted at 800-627-9433.

H.E. Mitchell Co. can be contacted at 800-626-5625.

Gauged		*Tip*
Center of First Cut		*.757"*
Cut to Cut		*.092"*
Depths		*1-.338", 2-.313", 3-.288", 4-.263"*
Keyblanks	***Master***	*All-Lock 94ST, B&S 594579, Silca GM25R, Ilco P1100, Curtis B76*
	Valet	*None*
HPC 1200CM	***Code Card***	*CF207*
	Cutter	*CW1011*
	Stop	*CM-1054MA Red Tip Stop*
Framon	***Spacing Block***	*#3, .092"*
	Start Cut	*.144"*
	Cutter	*FC8445*
	Stop	*Ford 5 Pin Clip*
Curtis	***Cam***	*CHRY-4*
	Carriage	*SAT-1A*
	Punch	*47°*

Tumbler Locations	***Space***	***1***	***2***	***3***	***4***	***5***	***6***	***7***
	Ignition	X	X	X	X	X	X	X
	Door		X	X	X	X	X	
	Trunk			X	X	X	X	X

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